PAPER TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 117, No. 12 Thursday, September 16, 1943 Price Ten Cents

Canada Takes Action on Newsprint Supply

Pulp and Paper Industry of Dominion Releases Report and Urges Pulpwood Cutting Be Declared Essential — Shortage May Total 1,750,000 Cords—Pulp Exports To U. S. Are Short 720,000 Tons.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 13, 1943.—Important action in respect to the supply of newsprint to the United States has been taken by the Pulp and Paper Industry of Canada, comprising all the leading provinces. In a report just made public, this joint organization calls for the classification of the cutting of pulpwood as an "essential" industry, as in the United States, and says there is need of immediate action to avert a prospective shortage of from 1,250,000 to 1,750,000 cords of pulpwood. The cooperation of the Canadian Government is sought in the transfer to woodcutting of 20,000 internees or prisoners of war and of farmers and rural workers when not engaged in farming. The report emphasizes:

Reports Pulpwood Shortage Critical

1.—The shortage is critical in the fact of increasing world demand.

2.—Pulpwood products today are indispensable in the manufacture of a wide and ever increasing range of war materials vital to the fighting forces.

3.—Official controls have already limited consumption and eliminated the major parts of non-essential use of pulpwood and its products.

4.—Excessive curtailment of operations will have far reaching and long lasting economic and social consequences for Canada.

5.—Excessive curtailment will seriously affect Canada's economic position in post-war markets.

6.—"Positive and immediate" help by the Dominion Government is necessary to maintain shipments at present level chiefly through "more active and effective use of the Industry by National Selective Service in the clarification and application of its regulations to the end that all possible farmers and rural workers when not needed on the farm may be employed gainfully in the woods, instead of remaining idle."

The report points out that over 81% of the Industry's use of pulpwood is for exports. Official estimates of the shortage run between 1,250,000 and 1,750,000 cords, or about 20% of the wood currently being consumed.

Estimated Canadian shipments for all pulp and paper products during 1943 are: Canada 1,021,566 tons representing 1,294,350 cords; United States 3,843,425 tons representing 5,479,303 cords; British Commonwealth and other countries 680,423 tons representing 1,036,565 cords.

Any saving in Canadian consumption would, the report states, be insignificant. Canada uses only 16.6% of the total pulpwood production in this country; newsprint used in Canada accounts for less than 3% of the total Canadian cut; and even the total elimination of all pulp and paper used in Canada would not offset the 20% shortage. It is admitted that some further economy in Canadian use of pulpwood might be possible, but such a saving would not exceed perhaps 75,000 cords in relation to the estimated over-all shortage of between 1,250,000 and 1,750,000 cords. That economy, in the view of the Industry, should be achieved and the saving should be devoted to releasing pulp, and therefore wood, for use in fields essential to the war effort.

So far as outside markets are concerned, it is emphasized that, as exports of other products are negligible, it is practical to consider only newsprint and pulps. Analysing newsprint exports, the report shows that 2,520,000 tons go to the United States and 328,000 tons to points overseas.

Newsprint to U. S. Cut 17.5 Per Cent

So far as the United States are concerned, statistics show that newsprint shipments have already been cut by 17.5%, a decline of over 500,000 tons. It is stressed that, even if newsprint production in Canada is maintained at current levels, some additional tonnage must be found for liberated countries as well as for Britain as shipping conditions improve. Such revision can be made only at the expense of Canada's best customer, the United States; and to a much smaller degree at the expense of Canada itself.

The report continues: "There have been in some quarters extravagant estimates of newsprint econ-

(Continued on page 17)

Timber Experts Appraise State-Owned Land

Value of 34,000 Acres To Be Sold and Turned Over To Menominee Indian Tribe—Dr. Barrows Resigns Presidency of Lawrence College — Neenah Paper Co. To Celebrate "E" Award — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 13, 1943.—Six expert timber cruisers, representing the state land commission of Wisconsin, the U. S. Forest Service and the Wisconsin Conservation Commission have begun an appraisal of the value of 34,000 acres of state-owned and state-claimed timber and swamp land in Oconto and Shawano Counties. The properties are to be sold to the Government, with the intention of turning them over to the Menominee Indian tribe through jurisdiction of the Department of Interior. The lands adjoin the present Menominee reservation.

Addition of these lands will permit the Indian tribe to expand selective logging operations under federal management. The pulpwood supply adjacent to most of the Wisconsin mills will thus be augmented by using the Indian labor available.

A price of $1,500,000 had been set in the original negotiations, but Governor Walter S. Goodland demanded the appraisal before closing the deal, believing the value is nearer $3,000,000.

Neenah Co. to Celebrate "E" Award

Ceremonies for awarding the Army and Navy "E" to the Neenah Paper Company, Neenah, Wis., have been set for Saturday, September 25, when officers will be on hand to participate in a program now in preparation.

This company feels proud of its achievement, because it is the first rag content mill in the United States to be singled out for the award. Qualifications are numerous from quality and efficiency to effective labor relations, lack of absenteeism and others, but these have been met successfully so as to excel in the development and production of materials needed by the armed forces. Less than three per cent of all manufacturing plants in the country have been able to qualify.

The award entitles the mill to fly the Army-Navy "E" pennant, and permits the employees to wear the pin bearing the Army-Navy E emblem, the highest honor given civilians engaged in war work.

Sangamon Workers Get Wage Increase

Workers of the Sangamon Paper Mills, Kaukauna, Wis., have been granted a wage increase of five cents per hour, according to P. J. Russell, mill superintendent. Approval was announced by the War Labor Board, and the increase became effective September 6. Prompt consideration was given because the mill devotes a high percentage of its production to the war effort.

Dr. Barrows Resigns Presidency

Dr. Thomas N. Barrows, president of Lawrence College and director of its affiliate, the Institute of Paper Chemistry, Appleton, Wis., tendered his resignation last week. He was dean of the college from 1934 to 1937, when he was elected president to succeed Dr. Henry M. Wriston.

The resignation came upon advice of medical authority, recommending a milder climate so as to avoid further health complications. It takes effect this fall, and Dr. Barrows will make his future home in southern California.

Considerable progress has been made in the Institute of Paper Chemistry since Dr. Barrows became its director. Its plant and facilities have been expanded, and much of its service is now being devoted to war work.

Ralph J. Watts, business manager of the college since 1926, has been appointed acting president until a successor to Dr. Barrows is chosen.

Institute Scientists Present Paper

Emil Heuser, R. A. Stillings and J. Van Nostrand, scientists associated with the Institute of Chemistry, Appleton, Wis., presented a paper before the division of cellulose chemistry at the 106th annual meeting of the American Chemical Society last week at Pittsburgh. The subject was "The Action of Ultraviolet Light upon Cellulosic Materials."

Major Sensenbrenner is Detailed

Major John S. Sensenbrenner, a director of Kimberly-Clark Corporation, Neenah, Wis., has been detailed to attend the School of Allied Military Government for Occupied Territory at Charlottesville, Va. He will follow a course preparatory to overseas duty. The officer has been stationed in the Pentagon building in Washington, D. C. since last November.

Will Permit Use of Fiber Boxes

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 13, 1943—No flat prohibition against the use of fiber containers for shipping, except in cases where it is practical to package products in less critical materials, will be contained in a War Production Board order covering fiber containers to be issued soon, the Containers Division of WPB announced recently. Instead, the order probably will require reduction in tonnage of fiber containers for various products, the Division said.

The announcement followed receipt by the Containers Division of letters and telegrams of protest against rumored provisions of the proposed order from furniture manufacturers, which were too numerous to answer individually at this time. Many of the communications erroneously assumed that the proposed order would carry sweeping prohibitions against the use of fiber shipping containers for all furniture.

An exceedingly critical situation exists in the supply of fiber containers for all essential requirements, including those for military and export, and a reduction in the quantity of fiber container material for many commodities is necessary, the Containers Division said. It is probable that less material or lighter material will have to be used for shipping many essential products.

THE DYE THAT NEVER SAYS DIE!

OUR MAN'S down all right, but he's not out. He's still got a fighting chance.

For as he hits water, the American pilot rips open his "Life Jacket Dye-Marker"...spreading a brilliant yellow-green splotch around him. From the air, that vivid patch can be seen miles away by day... is even visible in moonlight...signalling searchers to the rescue.

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Chicago Reports Very Strong Paper Market

Sulphite and Kraft Lines In Tight Supply With Groundwood Papers Stronger — Salesmen To Cooperate With TAPPI In War Conference — N.P.T.A. Regional Meeting Opens September 28.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., September 13, 1943.—The Chicago paper industry is not yet ready to comment on the effects of the new standards and maximum weights of writing and printing papers which went into effect September 1. Rather are the local sales and jobber offices more anxious to wait and see just how the trade itself accepts the new standards. It expects to get the reactions within the next couple of weeks—reactions which will either indicate a more tense situation or an improvement in some grades.

Meanwhile, the market continues its somewhat chaotic progress. Buyers are reported to be grabbing up all available inventories of old stock and willing to make long commitments on the newest papers to be made. Some mill representatives are as much as five months behind in orders. Sulphites, in particular, have joined krafts as among the "tightest" lines in the market while groundwoods are in an increasingly strong position. Books and covers were waiting to see the results of latest curtailments while, in general, the industry was waiting to see how quickly the pulp situation could be bettered and how much could be done this fall in bringing back into commercial use the waste paper now in the hands of consumers, soon to be subject to another—and bigger—waste paper drive!

Salesmen to Cooperate with TAPPI

The western division of the Salesmens Association of the Paper Industry will hold no formal meeting on Monday, September 20, but will rather extend all cooperation to TAPPI in its Army-Navy War conference to be held here September 20 to 22. According to the SAPEYE members, full 100% cooperation is to be given TAPPI through attendance, assistance in providing publicity and in otherwise acting as a host organization. No September golf outing will be held by the SAPEYES as has been the custom during past years when the NPTA met in Chicago, but the rest of the hospitality "trimmings" will be amply in vogue during the week when Chicago will be the capital of the wartime paper world.

N.P.T.A. Regional Conference Scheduled

With Corwine E. Roach, president of the N.P.T.A. making his first formal appearance after a long and serious illness, the Association will feature a regional meeting on September 22 with the Chicago Paper Association acting as the sponsor. High ranking officials of N.P.T.A. including acting president Kettles and Mr. Roach will be present when the session gets under way early on the morning of the 22nd and all are expected to present current reports as to the latest developments in the industry. Members will attend the sessions of TAPPI as will members of local and regional associations including the Fine Paper Association of Chicago, Fibre Box Association, Gummed Industries Association, Folding Paper Box Association, National Paperboard association, Paper and Twine Club Salesmens Association of the Paper Industry, Set-up Paper Box Association; Waxed Paper Institute and the Waterproof Paper association.

Not all the week will be devoted to business. The Chicago Paper Association is staging a golf tournament at Tam O'Shanter on September 23 and President S. S. Weil expects more than 400 merchants and mill executives to be on hand for the golf and dinner. The Paper and Twine Club will also put forward its usual hospitality with a "Fort Dearborn" night on the evening of September 21 which will really be a joint undertaking of TAPPI and the Club and will feature food, music, dancing and entertainment.

The main affair, however, will continue to be the Army and Navy conference of TAPPI and A. E. Montgomery of the J. O. Ross Engineering Company, reports that leading Army and Navy ordnance officials will be on hand for what promises to be the greatest assemblage of pulp and paper leaders yet held.

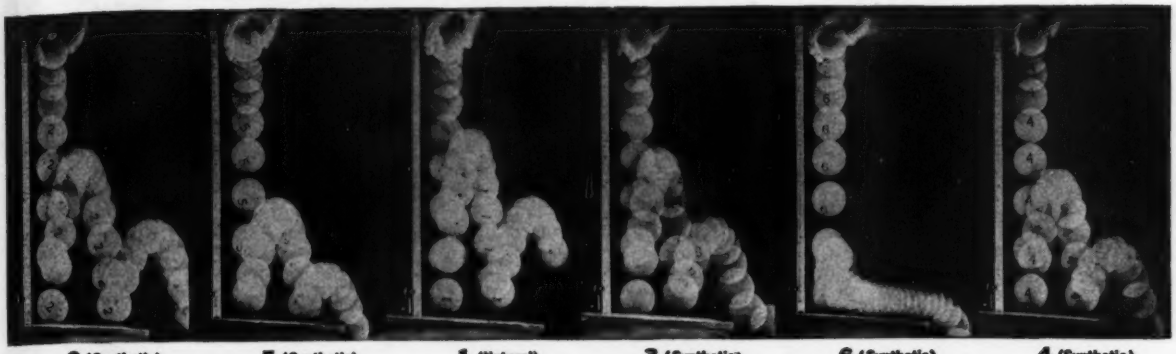
Interest in Waste Liquor Conversion

The marked interest shown by Chicago paper sales executives in new proposals to develop synthetic rubber from waste sulphite liquor has been on the increase ever since the August 23 meeting of the western division of the Salesmens Association of the Paper Industry at which time Dr. M. M. Rosten of the Ontario Paper Company took a large and interested audience "behind the scenes". At that time Dr. Rosen stated that a possible 100,000,000 gallons of alcohol can be produced from the waste sulphite liquor annually and added that this much alcohol is equivalent to the use of over 40,000,000 bushels of grain annually. He pointed out that synthetic rubber, on a soundly developed basis, could be produced at around 25 to 30 cents a pound. The story of the waste liquor program is being taken to pulp mills in Wisconsin and Michigan by the Chicago Tribune, owners of the Ontario pulp mill. This week the Rhinelander Paper Company was visited as a Tribune car, equipped with tires made from the synthetic rubber, strove to get adequate records as to performance. According to reports, F. A. Becker, president of Rhinelander, has indicated that the Marathon Paper Company will process that company's waste sulphite liquor either at Rhinelander or at the Marathon plant at Rothschild.

Massengale Promoted by Eastern Corp.

The many Chicago friends of John Massengale were pleased to learn of his election as vice president in charge of sales of the Eastern Corporation. Mr. Massengale was Chicago district sales manager for two years and left here in 1942 to become sales manager operating from the Bangor, Maine, offices. Mr. Massengale and other Eastern Corporation sales executives will be in Chicago the week of September 20 attending the TAPPI conferences and finding time for one special "Eastco" meeting where current problems will be discussed.

BOUNCE, BALLS, BOUNCE!



2 (Synthetic) 5 (Synthetic) 1 (Natural) 3 (Synthetic) 6 (Synthetic) 4 (Synthetic)

SIX SOLID BALLS OF RUBBER caught in the act of bouncing by a high-speed camera that shoots at the speed of 1/6592 of a second. All of them were dropped from exactly the same height...and yet, what a difference there is! One of the balls is made of a compound containing natural rubber. Each of the other five balls contains one of the five major types of synthetic rubber.

Can you pick out which of the balls is made of the rubber used in making Army barrage balloons? Which rubber is being used today for making tires for military and essential civilian cars? Which one is used for bullet-sealing gasoline hose? Which for insulating tape? Which for making lacquer hose? Try your skill. You will find the answers to these questions in the box at the bottom of this page.

SYNTHETIC RUBBER IS NOT JUST ONE NEW KIND OF RUBBER

It is a whole family of new materials each with its own important uses

Bounce the balls as much as you please. One bounces high. One bounces low. One bounces in between. Which one is best? Actually, there is no one "best kind" of rubber for every purpose. Without all of these main types of synthetic and natural rubber, it would be impossible to beat our enemies and bring our victorious men home as swiftly as possible.

The rubber industry, the chemical and petroleum industries, the Government, working as a team, have made this achievement possible. By pooling all their experience with synthetic rubber, their resources, their skill, they have broken the threat of "rubber shortage" the Axis counted on to throw us out of the war. More than that, they have produced types of synthetic rubber that can do special jobs better than they have ever been done before... and for all time declared our independence from any future cut-off of the nation's rubber supply.

That is the true meaning of the synthetic rubber program. We are proud to have contributed our experience and our resources to doing this job... and doing it in record-breaking, history-making time.

What the future holds for synthetic rubber is not yet fully known. Yet this much is certain. When the war is won, the knowledge we are gaining every day through the use of all these synthetic rubbers, alone and with natural rubber, will make peacetime products... whether tires for your car, belts for your factory, waterproof footwear for your children, or gasoline hose for your service station...better and more serviceable than they have ever been before.

THEY MAY LOOK LIKE "SIX OF A KIND" BUT HERE ARE THE ANSWERS TO THE WAR JOBS EACH ONE CAN DO

1. This ball was made with natural rubber...today used in limited quantities in combination with synthetics because of our small reserve stock.

2. Used for tires, conveyor belts, fire hose and many other products. It is most like natural rubber and can be quickly and efficiently processed.

3. Used for making solvent and lacquer hose and other products where the utmost resistance to solvents is needed...better than natural rubber for these purposes.

4. Used for making bullet-sealing fuel hose for planes and for other uses where high resistance to aromatic fuels is essential.

5. Used for coating barrage balloons, tank linings, packings, acid hose, wires and cables. This type does not support combustion and is highly resistant to sunlight and chemicals.

6. Used for insulating tape, molded parts. It is soft, pliable and odorless.

Listen to United States Rubber Company program, featuring New York Philharmonic Symphony Orchestra, Carl Van Doren, and a guest star, broadcast over Columbia network every Sunday afternoon 3:00 to 4:30 P. M. Eastern War Time

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UNITED STATES RUBBER COMPANY

Doubt if Canada Can Fill Newsprint Quota

Acute Shortage of Labor Creates Difficult Condition For Newsprint Mills To Produce the 3,040,000 Tons Hoped For—Production Estimates of Leading Mills Tabulated — Other Late Mill News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 13, 1943—There is considerable doubt as to the ability of Canadian newsprint manufacturers to produce the 3,040,000 tons that had been hoped for and which some contend will be forthcoming. Last year the industry produced 3,177,094 tons and the year before 3,425,865 tons. In 1939 production was 2,869,266 tons. Conditions are vastly different now. There was plenty of labor before the war began and there were no controls on production. Now, not only does the Wartime Prices and Trade Board tell each operator how much to produce, but he is also told where to ship it and to whom. Whether or not the industry achieves its objective for this year depends, not so much on what government officials say must be produced, as it depends on the pulpwood supply, and this is determined by the man-power available.

Lack of Manpower Critical in Woods

There are those who claim that the government's labor policy has been at fault. It is apparent, however, that the lumbering and pulpwood producing communities have been drained of manpower by the armed services and urban industries. It has been said that farmers are afraid to engage in woods operations lest they lose their agricultural priority and thus be subject to military draft. That must surely be a libel on the farmer. He has his own labor problems, even during the winter. Few who would be equal to operations in the woods are left on the farms.

On the basis of the established percentages alloted to the various newsprint manufacturers by the Newsprint Administrator, *The Financial Post* has worked out the estimated share of each company, on the assumption that the industry reaches its objective of 3,040,000 tons for the year. *The Post's* figures are:

Estimated Production for Newsprint Mills

Canadian International Paper	483,056
Abitibi	395,504
Consolidated	392,160
Price Bros.	259,008
Powell River	171,760
Spruce Falls	147,136
Anglo-Canadian	142,880
Minnesota-Ontario	131,024
Ontario Paper	130,112
St. Lawrence Paper	124,944
Quebec North Shore	100,928
Great Lakes	93,904
Mersey Paper	81,472
Lake St. John	69,920
James Maclaren	69,920
Donnacona	56,818
Pacific Mills	56,240
Donohue Bros.	32,528
E. B. Eddy	30,400
Brompton	28,272
Beaver	18,240
Bathurst	11,856
J. R. Booth	9,120
St. Raymond	9,120
Provincial	3,648
Total	3,040,000

Some of these mills will not be able to produce their share of available business, because of power shortage, wood supply, transport difficulties, etc., but other companies will take up the slack. The business is not on a competitive basis any more. Profits move up or down according to the price received for newsprint and the volume of business done by the industry. It is all fixed, for the duration.

When the industry is permitted to return to normal and restrictions are removed, conditions will be vastly diffeent again. Will they return to pre-war keen competition, or will the industry prefer a measure of control? The Scandinavian countries will again be a factor in the industry. Competition may force the price down. While little can be done about it now, the question of the future of the newsprint industry seems to be occupying the minds of some of the more foresighted.

Abitibi Improves Working Capital

During the period of receivership of Abitibi Power and Paper Company, from September 30, 1932, to December 31, 1942, the net increase of $25,231,205 which took place in the company's indebtedness to the bondholders was more than offset by the $25,831,731 improvement in net working capital.

At December 31, 1942, the receiver reported net working capital of $24,735,272. This did not take into account $975,000 received early this year from the sale of the Espanola assets. Perhaps another $2,000,000 might be added as a result of operations for the first eight months of this year—an average of $250,000 monthly, as compared with average monthly earnings of $690,000 for the similar period of 1942.

This would indicate net working capital of around $27,700,000, before making provision of the principal payment of $9,000,000 made to bondholders on June 30. Allowing for this principal distribution, net working capital at the present time can be roughly estimated at between $18,000,000 and $19,000,000, which would be $7,500,000 or more in excess of the reserve of $10,500,000 suggested by the Royal Commission. To make a further payment to bondholders of 8 per cent on principal account, as suggested in one plan for re-organization, would require less than $4,000,000.

Survey of results during receivership for 1932 to date shows that out of aggregate earnings of $43,711,000 in a period of nearly ten years and four months to December 31, 1942, approximately $27,000,000 was earned in the past three years. Annual earnings have fluctuated from the 1933-34 low of under $1,000,000to the 1941 peak of over $10,100,000. This wide range of fluctuation in earnings indicates to statisticians that any re-organization of Abitibi should aim at a substantial reduction in funded debt and fixed charges. One plan suggests that the outstanding bonds be cut in half (to $24,133,500 from $58,267,000 before the receivership) over a period of about 12 years. The high volatility of newsprint earnings demonstrated in the Abitibi record was due not only to the variability of newsprint and pulpwood prices, but also to wide swings in tonnage and costs.

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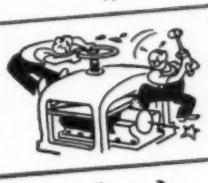
EXTREME SPEEDS	20,000 TO 50,000 R.P.M.		Gargoyle Grease BRB4 (for ball bearings)
HIGH PRESSURES	MEETS MOST SEVERE STEEL MILL USE		Gargoyle Grease Sovarex L
LOW TEMPERATURE	−40° F.		Gargoyle Mobilgrease Zero
WIDE TEMPERATURE RANGE	+250° F. TO −60° F.		[Name on Request]

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There is available to you the same full line...the same high quality in Gargoyle *Greases* that you have learned to depend upon in Gargoyle *Oils*.

And they are sold on the same basis i.e. *their use will bring you benefits in power and maintenance economies...and in full time, capacity production!*

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ONE OF A SERIES OF SUGGESTIONS TO AID PRODUCTION

Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 13, 1943—The Central Ohio Paper Company has been awarded the contract for furnishing the Government Printing Office with 200,000 pounds of white M.F. book paper at 6.98 cents. Other paper awards recently announced by the Printing Office include the following:

Frank Parsons Paper Company will furnish 150,000 pounds of ground wood writing paper at 6 cents. The same firm will also furnish 15,000 pounds of white M.F. book paper at 6.80 cents and also 45,000 pounds of same at the same price. Barton, Duer & Koch Paper Company will furnish 5,000 pounds of of back lining paper at 5.19 cents and the Leith Paper Company will furnish 100,000 pounds of 50% rag, machine dried bond paper at 14.5 cents. Marquette Paper Corporation will furnish 18,000 pounds of 25% rag, white bond paper at 12.90 cents and the Stanford Paper Company will furnish 200,000 pounds of 50% rag, white litho finish map paper at 15.75 cents.

Walker, Goulard Plehn Company will furnish 143,500 pounds of coated book paper at 9.33 cents and Frank Parsons Paper Company will furnish 163,400 pounds of white M.F. book paper at 6.49 cents. Central Ohio Paper Company will furnish 46,000 pounds of 25% rag white ledger paper at 14.64 cents and the same firm will furnish 103,500 pounds of same at the same price. Bermingham & Prosser will furnish 130,000 pounds of same at 14.5 cents and Barton, Duer & Koch Paper Company will furnish 15,000,000 sheets of white ground wood mimeograph paper at $.70 per M sheets.

Barton, Duer & Koch Paper Company will furnish 182,784 pounds of 50% rag, ledger paper at 14.5 cents and Frank Parsons Paper Company will furnish 750,000 pounds of white chemical wood writing paper at 7.02 cents. The same firm will also furnish 750,000 pounds of same at 5.42 cents. Paper Corporation of U. S. will furnish 157,160 pounds of buff offset book paper at 8.58 cents.

Mead Sales Company, Inc., will furnish -60,000 pounds of poster paper at 6.84 cents and Walker, Goulard Plehn Company will furnish 100,000 pounds of chemical wood writing paper at 8 cents. Mudge Paper Company will furnish 5,000 sheets of Quaker drab cloth lined cover paper at $232.45 per M sheets and Wilcox, Walter Furlong Paper Company will furnish 500,000 pounds of white groundwood writing paper at 6.75 cents. The same firm will also furnish 650,000 pounds of same at the same price and Barton, Duer & Koch Paper Company will furnish 200,000 pounds of 50% rag, white bond paper at 15.45 cents and the Mudge Paper Company will furnish 160,000 pounds of supercalendered book paper at 7.17 cents.

Central Ohio Paper Company will furnish 200,000 pounds of white chemical wood writing paper at 7.27 cents and the Howard Paper Company will furnish 100,000 pounds of same at 7.905 cents. Mead Sales Company will furnish 150,000 pounds of same at 7.04 cents and Allied Paper Mills will furnish 80,000 pounds of white supercalendered bookpaper at 7.92 cents. Walker, Goulard Plehn Company will furnish 100,000 pounds of 50% rag, white bond paper at 17.25 cents and Minnesota & Ontario Paper Company will furnish 400,000 pounds of white ground wood writing paper at 5.9 cents.

Wilcox, Walter Furlong Paper Company will furnish 269,250 pounds of white groundwood writing paper at 6.75 cents and Walker, Goulard, Plehn Company will furnish 46,000 pounds of white chemical wood writing paper at $3,680.00. R. P. Andrews Paper Company will furnish 95,500 pounds of tan bristol board cover paper at 9.15 cents and the Mead Sales Company will furnish 60,000 pounds of machine coated book paper at $7.28 per cwt. Barton, Duer & Koch Paper Company will furnish 200,000 pounds of chemical wood white writing paper at 7.25 cents and Walker, Goulard Plehn Company will furnish 37,100 pounds of buff Windham bristol board at 6.9 cents.

Walker, Goulard Plehn Company will furnish 100,000 pounds of white chemical wood bond paper at 9.7 cents and the Cauthorne Paper Company will furnish 800,000 pounds of groundwood writing paper at 5.9 cents. Stanford Paper Company will furnish 400,000 pounds of supercalendered book paper at 7.178 cents and the Mead Sales Company will furnish 800,000 pounds of white writing paper at 7.04 cents. Wilcox, Walter Furlong Paper Company will furnish 100,000 pounds of 50% rag, white bond paper at 17.25 cents and the Mudge Paper Company will furnish 200,000 pounds of white chemical wood writing paper at 7.5 cents. Whitaker Paper Company will furnish 60,000 pounds of 50% rag, white bond paper at 15.9 cents and Stanford Paper Company will furnish 200,000 pounds of supercalendered book paper at 7.178 cents.

Stanford Paper Company will furnish 112,000 pounds of 50% rag bond paper at 16 cents and Walker, Goulard Plehn Company will furnish 112,000 pounds of same at 16 cents. Riverside Paper Corporation will furnish 150,000 pounds of white chemical wood writing paper at 7 cents and the Northwest Paper Company will furnish 300,000 pounds of same at 7.04 cents. Mead Sales Company will furnish 80,000 pounds of chestnut cover board at $75.00 per ton, and Mathers-Lamm Paper Company will furnish 5,400 pounds of white tissue paper at 13.35 cents. Paper Corp. of U. S. will furnish 33,800 pounds of dull coated book paper at 10 cents and Stanford Paper Company will furnish 266,500 pounds of supercalendered book paper at $7.178 per cwt.

Paper Corporation of U. S. will furnish 52,000 pounds of chemical wood pink bond paper at 10.75 cents and Bermingham & Prosser Company will furnish 100,000 pounds of white chemical wood bond paper at $9.25 per cwt. Whitaker Paper Company will furnish 102,000 pounds of 25% rag white bond paper at 13.9 cents. Central Ohio Paper Company will furnish 200,000 pounds of white chemical wood writing paper at 7.27 cents. Howard Paper Company will furnish 100,000 pounds of same at 7.905 cents and Mead Sales Company will furnish 100,000 pounds same at 7.04 cents. Allied Paper Mills will furnish 80,000 pounds of white supercalendered book paper at 7.92 cents and Walker,

Training YOUR sights on the future?

WYANDOTTE, servicing half a hundred industries with basic chemicals, plays its part in science's ceaseless striving for the betterment of mankind. For in peace or in war, the good technological man is and always has been what the American fighting man is today — an *all-out* fighter for a better world.

In the van of this perpetual advancement of humanity . . . through blueprint, test tube, laboratory, and never-ending research . . . in peace, and now in war for the better peace to come . . . Wyandotte technicians have helped play an important role. Working in the present, they train their sights *on the future.*

Whether your industrial production has been regeared to war demands, or continues along pre-war established lines, problems inevitably arise . . . problems whose solutions may be bound up with a speedier peace, more vital post-war living. To help you in any way it can, Wyandotte freely offers the services of its experts. The fruits of their background and specialized training are yours . . . without obligation.

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Goulard Plehn Company will furnish 100,000 pounds of 50% rag, white bond paper at 17.25 cents. Minnesota & Ontario Paper Company will furnish 400,000 pounds of white groundwood writing paper at 5.9 cents and Wilcox, Walter Furlong Paper Company will furnish 269,250 pounds of white ground wood writing paper at 6.75 cents. Walker, Goulard Plehn Company will furnish 46,000 pounds of white chemical, wood writing paper at $3,680.00 and Mead Sales Company will furnish 60,000 pounds of machine coated book paper at $7.28 per cwt. R. P. Andrews Paper Company will furnish 95,500 pounds of tan bristol, cover paper at 9.15 cents and Barton, Duer & Koch Paper Company will furnish 200,000 pounds of chemical wood white writing paper at 7.25 cents. Walker, Goulard Plehn Company will furnish 37,100 pounds of buff Windham bristol board at 6.9 cents.

Perfect New "Chemwood" Process

Cromwell, Snyder & Co. with New York office at 60 East 42nd street, a chemical plant at Niagara Falls, N. Y., and a pilot plant in Washington, D. C., have perfected the "Chemwood Process" of deinking waste paper wherein it is possible to deink some of the lower grades of waste paper such as mixed groundwood books and magazines, for reuse in the manufacture of higher grades of new paper, such as uncoated book, machine coated book, white tissues, manifold, etc. Heretofore, as you know these lower grades of waste paper because of their groundwood content, have only been usable by board mills to any great extent, due to the action of the chlorine bleach on groundwood fibres in standard deinking practices.

The company states that at the present time there are mills using this process commercially every day, under license, among them the Standard Paper Manufacturing Company, Richmond, Va., and Newton Falls Paper Mill, Newton Falls, N. Y. The process can be utilized in any standard deinking equipment and employs a chemical known as DA-307. It has been found in commercial use that DA-307 leaves the fibres in better condition, takes less time for cooking, and permits mills to utilize waste paper without any sorting on their part.

Cromwell, Snyder & Co. has likewise perfected a process employing a similar chemical which permits the use of waxed carton and waxed papers of various descriptions whether printed or unprinted, delivering a finished pulp entirely free from wax and ink. The most recent process, completed in the pilot plant within the past month, is directed at the reclammation of waterproof asphalt-kraft in its various forms. This process permits the complete segregation of the clean kraft fiber on one hand, and the asphalt on the other, permitting reuse of both products.

Of vital interest, the company further states, is the fact that in none of these processes are there required any special installations of machinery or equipment, as the results are obtained by purely chemical means. Any paper mill with normal facilities for using waste papers can use any or all of these processes.

All of the above techniques have been demonstrated successfully for officials of the War Production Board and to various interested members of the pulp and paper industry.

Continues Pulpwood Ceiling Prices

WASHINGTON, D. C., September 13, 1943—Temporary ceiling prices established June 22, 1943 on pulpwood cut from the stump in Maryland, West Virginia, Pennsylvania and Ohio have been continued in effect by the OPA.

These ceilings are for each seller the highest price which he charged per cord for deliveries in or prior to the period June 13 to 18, 1943 or the highest price which he had charged in a firm contract existing during that period even though the contract called for later delivery.

If a seller made no such deliveries or had no such contracts at one or more of five specified delivery points provision is made for determining his maximum price at such point or points. This maximum is the highest price at which he made a delivery or had a contract at another of the points, less the actual transportation and loading costs incurred by him in moving the wood from the roadside to the delivery point involved in the highest priced delivery and plus the actual transportation and loading costs incurred in the delivery he now wishes to make.

The five delivery points are: Delivered millyard; f.o.b. or f.a.s. railway cars; f.o.b. or f.a.s. trucks; f.o.b. or f.a.s. vessel or at a roadside.

If a seller cannot determine his ceiling under these two provisions, he should apply to his nearest OPA regional office.

Conferences are continuing with representatives of the industry, and data is being compiled, looking to the establishment of dollars-and-cents ceilings for pulpwood in these four states to replace the present "freeze" prices.

The foregoing action is contained in a new regulation, Maximum Price Regulation No. 464 (Pulpwood Cut from the Stump in the States of Maryland, West Virginia, Pennsylvania and Ohio) effective August 30.

Denies Revision of Pulpwood Prices

WASHINGTON, D. C., September 15, 1943—No further revision in the general level of pulpwood prices is contemplated, the Office of Price Administration stated today, to spike trade rumors which have led some producers and dealers in the Northeast to withhold deliveries of current orders in the hope of receiving higher prices through future maximum price increases.

Within recent weeks members of the Pulpwood Unit of OPA have consulted with representative members of the pulpwood industry in Portland, Maine; Albany, N. Y.; Plattsburg, N. Y.; and Montpelier, Vt., thoroughly discussing all provisions of Maximum Price Regulation 361, together with prices in the various zones into which the area covered by the regulation has been divided.

After meetings with the industry and carefully analyzing conditions, OPA said that it has concluded present ceiling prices in this area are generally fair and equitable. OPA added that it is, however, always glad to receive suggestions or recommendations regarding the situation in the Northeast from interested producers and consumers.

MPR 361 (Pulpwood Produced in the States of Maine, Vermont, New Hampshire and New York) became effective April 12, 1943, and was amended in certain particulars on June 24.

CANADA TAKES ACTION ON NEWSPRINT SUPPLY

(Continued from page 7)

omies that might be made. The majority of these estimates are, in the Industry's opinion, wholly unrealistic as they fail to take into account the world situation, the practical difficulties of effecting curtailment in this country where the raw materials are close at hand, and the effects of such proposed curtailments on the Canadian economy both today and in the post-war period". Further curtailment of shipments in the United States, the report says, entails consideration of these effects.

A—United States publishers have had great difficulty in adapting their operations to a moderate 10% cut in consumption.

B—The odium resulting from any substantial cut will fall on Canada, particularly as the United States has declared the cutting of pulpwood an essential industry. Practical experience has taught the Industry that the effects of this will be far-reaching and long-lasting.

C—Should newsprint supplies, mainly the responsibility of Canada, be cut more deeply and magazine paper in the United States, entirely the responsibility of United States mills, be left comparatively untouched the odium will be accentuated.

D—Reducing current newsprint operations will involve substantial increases in Canadian production costs. Reduction from the present operating rate of 65% to 50% would increase costs between $7.50 and $9.00 per ton.

E—Reducing current operations from roughly 65% to 50% of capacity would seriously affect mill communities in Canada which live principally on newsprint. Yet that would not solve the pulpwood shortage problem because it would save no more than 650,000 cords, or about half of the shortage which looms.

F—If the entire shortage were taken out of shipments to the United States, the reduction of 1,500,000 tons in annual shipments would reduce deliveries by 60%. Equal shortages in American production would likely ensue and the result would be a newsprint supply to the American press of 60% below the present reduced quantities. Current newsprint shipments are 82.5%; a further 50% cut would reduce them to 33% of this level. "The clamour that would arise as a result of this cut would certainly be describable conservatively as an international issue. If Canada has to do this (or make any substantial cut additional to existing curtailments) after taking all possible steps to prevent it which an enraged press could uncover, it would be bad enough. But if Canada fails in any of these steps, and in particular if the Government fails to support the industry in its own efforts to avert the disaster by the constructive means proposed, then indeed will Canada's greatest industry be irretrievably damaged in its most important market."

Dealing with exports to points overseas, the report shows that in certain markets Canada's newsprint shipments run from 17 to 57% of the 1939 figure. The Industry considers no justifiable reduction is possible in shipments to these points. In fact, increases seem inevitable.

Pulp Exports to U. S. Short 720,000 Tons

On the question of woodpulp exports, the report estimates that Canadian shipments this year to the United States will be 1,280,000 tons. On the basis of such Canadian shipments, net shortage of woodpulp imports into the United States will be 720,000 tons because European sources normally used by the Americans now are closed. Meanwhile, woodpulp consumption in the United States has risen from 9,750,643 tons in 1940 to an estimate of 11,050,000 tons in 1942. Illustrating how essential woodpulp has become to war production, it is shown that pulp and its products are being used as substitutes in explosives, synthetic yarns, etc.

In the United Kingdom, current consumption of pulp is at the irreducible minimum—20% of prewar volume. Canada is supplying 70% of that amount. Exports to other countries of the British Commonwealth and to Latin-America are covered by a meagre 28,000 tons which, it is estimated, Canada will ship in 1943.

The report reaches the "inescapable conclusion that no defensible additional curtailment of present use can be found sufficient to meet this shortage (1,250,000—1,750,000 cords). The alternative is cooperation between the Government and the Industry to prevent the shortage developing."

Committee to Study Talc

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 15, 1943—A proposed price regulation covering manufacturers' sales of talc, pyrophyllite and ground soapstone is being studied by an industry advisory committee composed of 10 representatives of companies producing these materials used in making paints, paper, rubber and cosmetics, the Office of Price Administration announced today.

The proposed regulation as presented to the committee, contains specific ceilings to replace the current ceilings established by Maximum Price Regulation 188 (Manufacturers' Maximum Prices for Specified Building Materials and Consumer Goods other than Apparel).

Those serving on the committee, formed to advise OPA on the industry's pricing problems, are:

Robert F. Sherwood, president, Carolina Pyrophyllite Company, New York; W. Wallace Roff, vice-president, Whittaker, Clarke & Daniels, Inc., New York; Henry H. Hanna, president, Clinchfield Sand and Feldspar Corporation, Baltimore, Md.; J. Frazier Glenn, secretary-treasurer, Georgia Talc Company, Western Carolina Talc Company, Asheville, N. C.; Grant Huntley, vice-president, Alberene Stone Corporation of Virginia, New York; J. P. Callahan, sales manager, International Pulp Company, New York; Robert S. Pennock, assistant to the president, Loomis Talc Corporation, Governour, N. Y.; Eugene W. Magnus, vice-president, Eastern Magnesia Talc Company, Inc., Burlington, Vt.; E. J. Ellsworth, vice-president, Sierra Talc Company, Los Angeles, Cal.; W. E. Skeoch, president, Southern California Minerals Company, Los Angeles, Cal.

Chairman of the group is Mr. Magnus. Mr. Skeoch was elected vice-chairman, and Mr. Pennock was named secretary-treasurer.

Obituary

Fred Luther Wood

Within a month of his 84th birthday, Fred Luther Wood died on Saturday, September 4, 1943 at his home, 263 Bay street, Springfield, Mass. For 64 years Mr. Wood had been associated with the United States Envelope Company. In 1879 he went to work for the Morgan Envelope Company, which was later merged with the United States Envelope Company, and this connection he had maintained until he died. Beginning as shipping clerk he was advanced to the position of salesman and for two years represented the Company on the road. In 1892 he opened the Providence office of the Company and later the Boston office.

When the latter office was opened, the company was operating as the United States Envelope Company, and Mr. Wood remained in the Boston office until 1903, when he returned to Springfield as Assistant Purchasing Agent of the Company. He became purchasing agent in 1908.

Mr. Wood was a member of the Purchasing Agents' Association of Western Massachusetts. His religious affiliations was with Hope Congregational Church.

He was born in Springfield October 8, 1859, and was educated in the Springfield schools. His long career in the paper field had brought him hosts of friends throughout the trade.

James C. Overmiller

SPRING GROVE, Pa., September 11, 1943—James C. Overmiller, well-known resident of the borough, died early Sunday morning, September 5, at the York hospital after an illness of less than a week. Although Mr. Overmiller had not been really well for some time, he was at his desk in the office of the P. H. Glatfelter company every day until he became acutely ill early last week. He is survived by his wife, Mrs. Ada Smyser Overmiller, and one son, Howard A. Overmiller, Spring Grove. He was in his 72nd year. Death was caused by a stomach infection.

Mr. Overmiller was born in Glen Rock, the son of the late Emmanuel and Sarah Glatfelter Overmiller. He resided most of his life in York county. He received his early education in the public schools of Glen Rock. At 16 years of age, he taught school for two years, after which he attended and was graduated from the Eton Barnett Business college, Baltimore. He was employed as private secretary to Schall Wilhelm, Harrisburg; the Harrisburg Telegram and the Broomell-Schmidt Boiler manufacturers, York, between the time of his graduation from business school and his coming to the office of the P. H. Glatfelter company.

He had been affiliated with the Glatfelter company since 1897, having served as private secretary to P. H. Glatfelter, I, to William L. Glatfelter, to P. H. Glatfelter, present president of the company, and as secretary of the company, itself, since its formation a number of years ago. With the death of Mr. Overmiller, the last of the original office employees of the company has passed on.

Mr. Overmiller served on the Spring Grove school board for a period of thirty years, and most of this time he served the board as secretary. He was influential in bringing about the three-year high school in the borough, and later, the four-year high school. He was always interested in the educational and social progress of Spring Grove. At the time of his death, he was a member of the school board .

George W. Bicking

On Sunday, September 5, 1943, George W. Bicking, 79, died at his residence, 5524 Broad Branch Road, N.W., Washington, D. C. He was the husband of Kate Rees Bicking and father of George W. Bicking, Jr., and Florence M. Bicking. Interment was at Friendship Burying Ground, Chester County, Pa.

Mr. Bicking was from a long line of paper makers living in and around Downingtown, Chester and Coatesville, Pa. In his early life he was connected with paper mills in the Middle West, then returned to Philadelphia to work for Dill & Collins. Later he worked for Jessup and Moore Company and then with Curtis & Bro. of Newark, Del. In 1913 Mr. Bicking became associated with the Paper Section, National Bureau of Standards, which was then under the direction of Fred C. Clark. Mr. Bickings's knowledge of paper making was reflected in the work of the Bureau, and his name appeared on many of the Bureau's publications. He was retired in 1934 because of Government regulations in regard to age.

Mr. Bicking's friends mourn his passing but they know that the paper industry is better for his having been connected with it.

Snow Plow Attachment to Lift Truck

With the announcement that snow plow attachments are available to equip its "one man gangs" for peeling back heavy blankets of snow which may occasionally hinder materials handling operations in storage yards, on open docks and on unprotected loading platforms, Towmotor Corporation, Cleveland, reveals another practical new development which not only makes possible efficient lift truck operation under adverse winter conditions but also increases the versatile trucks' adaptability to special seasonal jobs.

Securely mounted on a powerful Towmotor's standard forks merely by positioning and tightening a set of simple two-bolt drawclamps, the safety blade type plow is attached for service in a few minutes. No adjustments, other than setting forks at maximum width, are necessary. After plowing, the attachment is equally easily removed, so that there is a minimum of time lost before the lift truck proceeds with its regular assignments of lifting, moving and stacking materials.

Specially designed with a high carbon steel blade inclined at such an angle that it acts as a safety trip and permits the plow to ride safely over ordinary road obstructions, the plow attachment makes it possible to use the easily maneuvered Towmotor for clearing snow from factory roadways, walks and paved areas primarily devoted to materials handling operations.

A typical model has a 23-inch high moldboard, is 64 inches in overall length, and has a plowing width of 53 inches at extreme angle setting. It is also available in spring-trip models, and in greater widths. Complete information may be secured by writing direct to Towmotor Corporation, 1226 E. 152nd street, Cleveland, Ohio.

Issues Technical Changes in Tissues

WASHINGTON, D. C., September 15, 1943—Seven changes, mainly of a technical nature, in the tissue paper products regulations were announced by OPA.

These changes, embodied in Amendment No. 5 to Maximum Price Regulation No. 266 (Certain Tissue Products) effective September 14, 1943, follow:

1. A manufacturer who during the October 1-15, 1941 base period had an established practice of making a charge for less-than-carload lot shipments in excess of his price for carload shipments may add to the carload ceiling the lesser of (1) the differential employed in the base period, or (2) 5.05%, plus the difference between the carload and less-than-carload rate of freight. This incorporates a long-established practice in the industry.

2. The provision providing relief for signatories of voluntary agreements is revoked. All eligible manufacturers have obtained the relief provided for in this section.

3. The definition of manufacturer is amended to include agents of manufacturers. Previously agents were not specifically provided for although most of them sold at manufacturers' ceilings as today's amendment now permits.

4. Differentials for four-inch width interfolded toilet tissues are set at 35 cents per case of 100,000 sheets below the ceiling for the standard four and a half inch width, or that differential customarily employed by the manufacturer during the October 1-15, 1941 base period, whichever is greater. This has been done to aid the War Production Board's program of fibre conservation by reducing the differential from the "proportionate" reduction formerly required which averaged 65 cents per case. The increase now permitted in maximum prices for four inch width affects a very small part of total toilet tissue sales. As interfolded tissue is a service item and not sold at retail, this action will not affect the cost of living.

5. Continuous unsheeted roll towels used in controlled delivery cabinets and having special metal or wood cores or ends are granted a differential of 20 cents per case over the regular ceiling. This differential is granted to take care of additional costs peculiar to the manufacture of these towels, which constitute an economical form of industrial towel service. They are not sold at retail and the differential granted today will have no effect on the cost of living.

6. The provision is revoked permitting the addition of extra packing charges on toilet tissue put up especially for the Armed Forces. Supplementary Order No. 34 will now govern the addition of these charges, bringing the procedure in line with that employed by the Office of Price Administration

7. The distributors' provisions regarding mark-ups have been clarified by slight changes in the wording.

To Include Paper and Paper Products

WASHINGTON, D. C., September 15, 1943—List B of Priorities Regulation No. 3, indicating items which may not be purchased with the use of preference ratings assigned for maintenance, repair, or operating supplies, has been amended to include paper and paperboard and products manufactured therefrom and moulded pulp products, excluding carbon paper, tracing paper, reproduction paper, sensitized paper, engineering graph paper, and chemically treated paper for engineering use, the W.P.B. announced.

Rules on Price Differential

WASHINGTON, D. C., Sept. 15, 1943 — Pending issuance of a specific regulation governing their sales, merchants dealing in light weight book paper, writing paper, and certain other fine paper, doing business in seven Western states, will be allowed by the Office of Price Administration to pass on to their customers the increased differentials authorized by recent paper manufacturers' regulations, OPA said today.

Merchants selling these papers in the States of Washington, Oregon, California, Nevada, Idaho, Arizona and Utah, controlled by the General Maximum Price Regulation at the highest price charged during March, 1942, have had to absorb additional charges allowed manufacturers under recently issued Maximum Price Regulations 450 (Writing Paper and Certain Other Fine Paper) and 451 (Book Paper).

Today's action, authorized in Amendment No. 26 to Revised Supplementary Regulation No. 14 to the GMPR, effective September 20, 1943, is a temporary concession to far Western light-weight paper merchants. These merchants are governed by a different set of price controls than in other parts of the country, where merchants are under MPR 400 (Merchants' Prices for Fine Papers and Certain Paperboards). MPR 400 permits sellers to pass on to their customers the increased differentials allowed by new manufacturers' regulations.

In the interim while OPA is gathering data for a specific regulation to govern Western paper merchants, in order to obviate the possibility of substantial hardship arising out of this situation, merchants in the seven designated states have been relieved of the necessity of themselves absorbing the new manufacturers' differentials.

Maximum Price Regulations 450 and 451, under which manufacturers were granted the additional charges, were devised, OPA said, to encourage the fullest possible use of light-weight papers, with the view to conserving pulpwood fibre. Although these regulations granted an increase in price upon the basis of paper weight, consumers will very largely obtain the same, or even a greater amount of paper upon a basis of surface area. Consequently, the over-all effect of today's amendment, in the light of the entire conservation program, is not to increase the consumer's costs at the retail level.

OPA Defines Pulpwood "Cord"

WASHINGTON, D. C., Sept. 15, 1943—In recognition of the customary trade requirements for "a cord of pulpwood" in the states of Minnesota, Michigan and Wisconsin, the OPA has revised its definition of the term in its regulation applying to pulpwood produced in these three states.

Amendment No. 1 to Revised Maximum Price Regulation No. 257 redefines a cord of pulpwood as an amount of pulpwood (whether peeled, rossed or rough) which, when properly stacked, contains not less than 128 cubic feet, plus a 4-inch allowance for trim per stick. The amendment becomes effective September 8, 1943.

The revised regulation priced pulpwood in terms of 128 cubic feet of wood properly prepared and stacked. Trade custom in Minnesota, Michigan and Wisconsin, however, requires a pile of wood 4 feet high and 8 feet long, made up of sticks 100 inches long to equal 128 cubic feet.

Allan Hyer Speaks on Paper Mill Equipment

Allan Hyer, Chief, Distribution Section, Pulp and Paper Division, War Production Board, discussed "Materials and Equipment" at the monthly informal luncheon of the representatives of the Allied Industry Companies, selling machinery, equipment and supplies to the pulp and paper mills, held at the Commodore Hotel on September 13.

In his talk Mr. Hyer said: "On one of the desks in our office is a small card that says: 'If it won't help win the war—forget it.' It is not too easy to classify our individual activities and efforts on a basis of war importance, but one thing we are sure of—now as never before we must all give full time attention to this our most important business. We have the ball and our offensive is clicking on all fronts. We are gradually working our way down the field. We have crossed the 50-yard line and we are in the enemy's territory, but the chance of scoring depends upon how well we on the home front support the team.

"Among the most important of the many requirements of our fighting machine is paper, and when the history of the war is written, no industrial accomplishment will shine brighter than the record of the paper industry. Whether as a substitute for steel or other critical materials or a new development for a special purpose, the paper industry has found the answer and delivered the goods. And you who are the representatives of the allied industries of the paper industry, the sixth largest industry, have contributed your share by supplying the products that are used in the paper making process.

Paper Industry Faces Many Problems

"But this has been no easy task. There have been many problems and they are increasing. The No .1 problem at the moment is pulpwood and without pulpwood or its handmaidens waste paper and certain other fibrous materials, there obviously could be no paper. However, we now have the assurance of high officials of the WPB that we will be given more help in the way of equipment and manpower to provide an adequate supply of this very necessary raw material.

"Let's look for a moment at the pulp and paper mills. It is here that we find the real achievement. As you know, and as any pulp or paper mill will tell you, we in the WPB have been notoriously stingy in the distribution of controlled materials and equipment, but it must be kept in mind that we have not yet reached the peak of war production. There will be more planes, more ships, more trucks, more of everything and there can be no let up of this demand for several months. Occasionally we read of some program that has been reduced, such as tanks, but these changes are not reflected in the material supply.

Scarcity of Materials Is Acute

"A few days ago Art Wakeman and I called on one of the topside officials to ask a few questions about the prospects for more material. We were told about a shortage of certain units of equipment, of the frantic efforts to get more production, of the scarcity of materials. We listened to one end of a telephone conversation with a general on the other end. The call was made to get an answer to one of our questions. The whole conversation was recorded and later it was played back so that we could hear the reply. Briefly it was this: 'If we can keep up our production, if we can hold the line for one more year, maybe it will be possible to release more materials.' That's the Army's answer and they are running the show. Every change in the war strategy means more material and still more material, and so far we have never received a full percentage of our controlled material requirements, even for maintenance, repairs, and operating supplies.

"Other materials and supplies are no better. The applications, telephone calls, telegrams and interviews, coming into our office in one day make a veritable roll call of everything used in the manufacture of paper, and each one is important in carrying on paper production. One manufacturer must have carbon rings if he is to continue to supply this very necessary part for steam joints; another needs copper or more steel; a paper mill must have a new unit of equipment—a motor, a washer, a pump; a waste paper dealer needs a new baler; it might be a warehouse or a new roof or new rest room facilities because of female employment; a felt manufacturer needs cotton yarn; starch, casein, titanium; a new boiler, a digester, filtration equipment, and many others that are left out for lack of space not because they are less important. Breakdowns that call for emergency repairs must be handled immediately.

Material Requests Decided on Merits

"Each case must be processed individually. Each is decided on its merits according to the materials involved, and the results that will be obtained. If the request indicates an expansion, we must weigh it against the industry position of that certain grade or product, and if facilities are available elsewhere that can absorb the additional tonnage. The answer is no.

"As manufacturers, all of you have been acting a double role in meeting these demands. You have been called on to supply your products for war purposes, rather than for paper mills, which for many of you is the major interest. For instance, a group of about 40 equipment manufacturers producing about 80% in dollar value of the industry total have been operating between 85-90% on direct war products. A few of the larger companies have gone all out with 95%.

Electronics at Work

"The new motion picture 'Electronics at Work' was shown by B. T. Farish of the Westinghouse Electric & Manufacturing Co. This new film shows graphically the basic principles of electronics and illustrates the various industrial uses of electronic equipment."

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending September 11, 1943

STOCKS

	High	Low	Last
A. P. W.	2	2	2
Armstrong Cork Co.	39¼	37¾	39
Celotex Corp.	13⅜	13	13½
Celotex Corp., pf.	19	18½	18½
Certain-Teed Products Corp.	6⅜	5¾	6⅛
Certain-Teed Products Corp., pf.	59¼	53¼	58
Champion Paper & Fibre Co.	20⅜	20¼	20¼
Champion Paper & Fibre Co., pf.	107½	106½	107
Congoleum Nairn Co.	23¾	22¾	23¾
Container Corp. of America	19½	18½	19½
Continental-Diamond Fibre Co.	12⅞	11⅝	12⅝
Crown Zellerbach Co.	16	15⅝	15¾
Crown Zellerbach Co., pf.	98	97¼	98
Dixie Cup Co.	13¾	13	13¾
Dixie Cup Co.—A	44½	44	44¼
Flintkote Co.	21⅛	19¾	21
Flintkote Co., pf.	105¾	105¾	105¾
Robert Gair	3⅛	2¾	2⅞
Robert Gair, pf.	12¼	11¼	11¼
International Paper Co.	11⅝	10¾	11½
International Paper Co., pf.	62½	60	62¼
Johns-Manville Corp.	85¾	84½	85
Johns-Manville Corp., pf.	133	132½	132½
Kimberly-Clark Corp.	33½	32½	33½
MacAndrews & Forbes	26	26	26
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	38½	38¼	38¼
Mead Corp.	8½	8	8¼
Mead Corp. pf. A—6%	85	84	85
Mead Corp., pf. B—5½%	....	....	....
Paraffine Companies, Inc.	44	43	44
Paraffine Companies, Inc., pf.	100¾	100¾	100¾
Rayonier, Inc.	14¾	14¼	14¾
Rayonier, Inc., pf.	31⅝	30½	31⅝
Ruberoid Co.	26¾	26¾	26¾
Scott Paper Co.	41	41	41
Scott Paper Co., pf.	112½	112½	112½
Sutherland Paper Co.	....	....	....
Union Bag & Paper Corp.	9⅞	9	9½
United Paperboard Co.	4½	4⅜	4⅜
U. S. Gypsum Co.	69⅞	69	69⅛
U. S. Gypsum Co., pf.	175	174½	174½
West Virginia Pulp & Paper Co.	14½	13⅞	14¼
West Virginia Pulp & Paper Co., pf.	....	....	....

BONDS

Abitibi Pulp & Paper Co. 5s '53	....	....	....
Celotex Corp. 3¾s '55	101¼	101¼	101¼
Certain-Teed Products Corp. 5½s '48	102	101	101
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	106¾	106½	106¾
International Paper Co. 5s '47	104⅜	104⅛	104⅜
Mead Corp. 3½s '53	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending September 11, 1943

STOCKS

	High	Low	Last
American Box Board Co.	....	....	....
Brown Co., pf.	....	....	....
Great Northern Paper Co.	34½	33⅛	34½
Hummel-Ross Fibre Corp.	4¼	4⅛	4¼
National Container Corp.	....	....	....
St. Regis Paper Co.	3⅜	3	3⅜
St. Regis Paper Co., pf.	....	....	....
Taggart Corp.	4	3⅜	4

BONDS

American Writing Paper Co. 6s '61	98	97½	97½

H. J. Coon Elected Director

Harry J. Coon has been elected a director of the E. B. Eddy Co. and J. R. Booth, Ltd. It is understood Mr. Coon represents Garfield Weston on the boards of these two companies, control of which was purchased by Mr. Weston a few weeks ago. Mr. Coon was formerly executive assistant to the general manager of the Bank of Nova Scotia. Last January he was named chairman of the advisory committee to the treasury board on administration of personnel in the public service, a committee appointed by the Dominion government to investigate and make recommendations in all phases of personnel administration in every branch of the government service. He is a native of Belleville, Ont., and a graduate of Queen's University, Kingston.

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PHOTO BY U. S. ARMY SIGNAL CORPS

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ARMCO SPIRAL WELDED PIPE

PAPER TRADE JOURNAL

This Reg. U. S. Pat. Off.

Henry J. Berger

EDITOR

Vol. 117 September 16, 1943 No. 12

COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Palmer House, Chicago; September 21-24, 1943.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

OPPRESSIVE TAXATION

The current trend of higher taxation together with closer governmental regulation is indicative of a drastic regimentation of all major commercial activity. As such it is a serious threat to the functioning of the long established American system of free enterprise. A clear presentment of a realistic taxation plan and the dangers inherent in the present scheme, is given by Harley L. Lutz, professor of public finance at Princeton University, under the title of "Untaxing Business," issued by The Tax Foundation, 30 Rockefeller Plaza, New York. Mr. Lutz asserts that "large and continuing production is the only basis for achieving an adequate living standard or any semblance of security. Any approach to the attainment of so-called social gains that ignores this is unrealistic and fanciful. It is only under conditions of a free enterprise system that substantial advancement has been made in the elevation of living standards and the spread of security to a substantial number of a nation's population."

Continuing, Mr. Lutz points out that "enterprise is not free if it is subjected to excessive regulation and oppressive taxation. Unwise regulation is a powerful brake on productive forces but excessive taxation locks the wheels. Heavy business taxes deter production for the following reasons: (1) they add to the price of goods produced and reduce consumption; (2) they reduce profits and substitute apathy and caution for vigor, confidence and optimism and thus depress employment and wages; and (3) they deter investment and destroy incentive to expansion and risk taking. Only a policy of moderate taxation will insure a full release of the driving power of private initiative and private enterprise. This should be covenanted now by the administration and Congress and made effective at the end of the war. Moderate business taxes, that would release the full driving power of production at adequate wages and profits, mean that as soon as the war is over the excess profits tax and surtax should be repealed. The normal rate should be reduced to some point in the range applied from 1918 to 1932. In no case should the rate exceed 20%."

In his analysis of a fair and equitable taxation plan Mr. Lutz points out that "The mutual interdependence of production and profits has always been evident though it is sometimes less clearly perceived that production volume is influenced by profits than it is that profits are dependent upon production. That is, enterprises are more likely to be aggressive and vigorous in both planning and execution when profits are adequate than when they are inadequate. When a large proportion of the concerns in business are earning profits, there is a strong demand for labor and materials (representing wage payments in other industries and better returns to agriculture). If profits are inadequate, or if they are expropriated in large part by taxation, which comes close to the same result as profitless operation, apathy and caution take the place of vigor, confidence and optimism. Obviously, there will be a larger amount of employment and a larger aggregate of wage income payments when profits are substantial than there will be when profits are meager or missing. Taxation which abstracts the bulk of such profits as are earned can have a more depressing effect than business reactions arising from other causes."

Declaring that heavy business taxes deter investment, Mr. Lutz explains that "while earnings before taxes constitute a useful indication of the performance of a given company and an equally useful basis for comparisons among companies, the really significant datum for the individual investor is the earnings after taxes. The maintenance of the existing capital fund and its enlargement to assure production at a level required by the standards of living which the people desire, will involve a huge stream of new investment. As long as it is known, however, that a large part of any profits earned is to be taxed away, there can be no adequate incentive to pour large sums into existing or new business undertakings. This gives rise to the vicious circle which has already established the government as a partner in industry—government must finance where individuals will not, and individuals will not because government takes most of the profit in taxes, thereby clinching the case for its financing."

Plans for the postwar world, Mr. Lutz declares "contain no reference to the fundamental matter of the tax load on the productive forces. . . The real incentive to be found in a program of moderate taxation of business is that which is provided to the

spirit of enterprise. The postwar job of American business demands, for adequate fulfillment, the full release of the driving power of private enterprise. . . During the war, for reasons which seemed justified by the national emergency, the over-all tax levy on business could be, in some cases, 90% of earnings, of which 10% represented a postwar credit. . . . After the war, instead of leaving 10-20% of earnings for the support of enterprise, it is worth considering the effect of leaving for that purpose 80-90% of earnings. . . Removal of the tax shackles from business is the only way to provide through the enterprise system any sort of prospect for delivery of the postwar abundance that is postulated by the planners."

Sell Machinery to Mexican Firm

THOMSON, N. Y., September 13, 1943. — Two paper machines and the pulp grinders in the old Iroquois Pulp and Paper Company here have been purchased by Garza Brothers, a large lumber and paper making firm in Monterrey, Mexico, and will be shipped to that city for installation in a huge new mill, it has been learned here.

The mill property at Thomson has been purchased by the A. & P. Corrugated Board Corporation of Lowell, Mass., which will install larger machines and operate the plant, H. L. Joaken, a member of the purchasing firm, has announced.

The Sandy Hill Iron and Brass Works of Hudson Falls will design and place the plant in operation in Monterrey. The new Mexican plant will be designed primarily for production of kraft paper, but toweling and light board also will be made. The mill will be designed with an idea of expanding it eventually to a 10-machine plant.

Mexico formerly looked to England and Germany for heavy machinery, but since the war started the Mexicans feel that the United States can better supply their needs. The machinery from the Thomson mill will be shipped to Monterrey as the new plant construction progresses. The new mill will be the first one in northern Mexico. There is a large supply of wood near the site, but it will have to be treated with a special process to make it adaptable to paper making.

Dexter Asks Tax Reduction

WATERTOWN, N. Y., September 13, 1943. — The Dexter Sulphite Pulp and Paper Company of Dexter is asking the board of assessors of the town of Brownville to cut the 1943 real estate assessment from $775,000 to $400,000.

This assessment is on the main mill property, exclusive from the property, more recently owned by the now defunct Robert E. Read, Inc.

If such a reduction is not satisfactorily made the sulphite company, represented by Attorney A. Raymond Cornwall, will institute certiorari proceedings in supreme court to compel a review of the facts and the merits in the hope of obtaining a court-ordered reduction.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1943		Corresponding Weeks—1942	
July 31	90.7	Aug. 1	81.0
Aug. 7	90.0	Aug. 8	81.4
Aug. 14	91.6	Aug. 15	77.5
Aug. 21	91.1	Aug. 22	81.2
Aug. 28	91.5	Aug. 29	83.3
Sept. 4	*91.4*	Sept. 5	83.3

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1942	104.5	103.9	102.9	100.4	95.3	87.4	75.8
1943	87.2	88.9	89.5	88.7	91.5	86.5	84.4

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1942	80.8	82.8	90.6	86.9	80.1	90.4
1943	*91.3*	....	....	....	....	....

COMPARATIVE YEARLY SUMMARIES

	1936	1937	1938	1939	1940	1941	1942	1943
Year to Date..	78.1	86.9	69.0	78.9	86.7	94.2	93.2	*88.5*
Year Average..	80.4	79.8	71.5	83.4	85.6	97.4	90.4	....

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1937	83	89	89	91	88	80	69	77	72	70	57	47	75
1938	56	63	63	60	60	59	59	60	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	82	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96					

Week ending July 31, 1943—97
Week ending Aug. 7, 1943—94
Week ending Aug. 14, 1943—98
Week ending Aug. 21, 1943—95
Week ending Aug. 28, 1943—96
Week ending Sept. 4, 1943—97

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

To Open Von Wert Plant Nov. 1

VON WERT, Ohio, September 13, 1943.—Production of a million dollar branch plant at Reading, Pa., of the Container Company is to get under way November 1, company officials have announced. It also was announced that approximately $100,000 worth of new equipment for the Van Wert plant has started to arrive.

Addition of the new equipment here will call for employment of 50 more workers in addition to 715 already working in the local plant. Equipment will include new winders, line headers and presses, the latter being needed to make the metal headings for the Reading plant to be shipped there.

Some key men from the local plant are to be sent to operate the new branch at Reading. They will include P. W. Pritchard, assistant production manager here, who will be production manager; David Roggenkemper, assistant payroll chief, who will be in charge of that department at the branch plant, and Ross Wallace, winder foreman here who will serve in the same capacity at Reading.

A. E. McMaster Returns to Ottawa

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., September 13, 1943.—A. E. McMaster, associate wood fuel controller for Canada, has now returned to Ottawa. Mr. McMaster came to Vancouver in his official capacity on a short organization visit and becoming ill was confined to his home for two weeks before he was able to return to the capital.

Prior to going to Ottawa a few months ago to assume this post, Mr. McMaster has been a very active figure in the pulp and paper industry of Vancouver, and was formerly general manager of the Pulp and Paper Company, Powell River, B. C.

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Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Air Permeability of Paper*

TAPPI Tentative Standard T 460 m–43

This method is to be used for testing paper and paper products which permit the passage of 100 ml. of air in from 2 seconds to 30 minutes, except those which cannot be securely clamped against surface leakage, such as crepe and corrugated papers.

Apparatus

1. *Instrument.* The instrument shall consist of an outer cylinder which is partly filled with oil, and an inner cylinder, having a closed top, sliding freely in the outer cylinder. Air pressure for the test is provided by the weight of the inner cylinder. The instrument shall be arranged to furnish air pressure to the paper sample, held between clamping plates having a circular orifice of 1.00 square inch. The clamping plates may form the top of the inner cylinder, or be mounted in the base of the instrument, the latter being preferable. The surfaces of the clamping plates shall be flat within 0.0001 inch and the clamping device shall be so arranged that the sample may be securely clamped against side leakage of air.

The outer cylinder shall be 10 inches high and shall have an internal diameter of 3.25 inches. It shall preferably be equipped with four slender bars, each 7.5 inches long, 0.12 inch wide, and approximately 0.06 inch thick, mounted vertically and equidistantly on the inner surface of the outer cylinder, to act as guide tracks for the movable cylinder. The movable cylinder shall be graduated in units of 50 ml. and shall have a total range of 350 ml. It shall be 10 inches high and shall have an external diameter of 3.00 inches and an internal diameter of 2.90 inches. It shall weigh 567 ± 0.5 grams, producing a pressure of 4.89 inches of water.

2. *Oil.* The oil used with the apparatus shall be a lubricating oil having a viscosity of 60 to 70 seconds Saybolt Universal at 100°F. (37.8°C.) and a flash point of not less than 275°F. (A light spindle oil is suitable for this purpose.)

Note: Oil is used in preference to water because it does not corrode aluminum, and because it does not affect the moisture content of the sample. The oil should not contain any essential oil or other easily volatile oil and, for that reason, a minimum flash test is specified.

Calibration

The instrument shall be tested for air leakage by clamping a thin piece of hard-surfaced, air-tight material, such as tin foil or cellophane, between the plates. The leakage shall not exceed 50 ml. in 5 hours.

Test Specimen

The test specimen shall be approximately 1.75 inches wide and 5 inches long, except that specimens of any size larger than 1.75 inches in both directions may be used in the apparatus having the clamp in the base. The specimens shall be conditioned for testing according to TAPPI Standard T 402 m.

Procedure

Make the test in an atmosphere conditioned according to TAPPI Standard T 402 m. Place the instrument on a level surface so that the cylinders are vertical. Fill the outer cylinder with oil to a depth of approximately 5 inches, as indicated by a ring marked on the inner surface of the cylinder.

For the instrument having the clamp in the top of the inner cylinder, raise the inner cylinder and hold in a raised position with one hand, clamp the specimen between the clamping plates, then lower the inner cylinder and allow it to float in the oil. Alternatively, the inner cylinder may be removed, the specimen clamped, and the cylinder replaced in the outer cylinder, lowering gently until it floats in the oil.

Note: The proper procedure for clamping the specimen is to hold the inner cylinder in a raised position with one hand, and alternately tighten the knurled nuts so that the clamping pressure will be equal on both sides; or, the inner cylinder may be removed and replaced in the outer cylinder after the paper has been clamped. If only one nut at a time is turned down, the clamp will not bear evenly on the specimen, and air leakage will occur between the surfaces of the clamp and the specimen.

For the instrument having the clamp in the base, first raise the inner cylinder until its top rim is supported by the catch, and then clamp the specimen between the clamping plates. Then lower the inner cylinder gently until it floats.

When a steady movement has been attained, measure with a stop watch or other timing device the number of seconds required for any two consecutive 50-ml. intervals to pass the rim of the outer cylinder. (Smaller or larger volumes of air may be read on the inner cylinder and converted to the 100-ml. standard quantity.)

Note: Precautions should be taken to avoid subjecting the apparatus to vibration, as this increases the rate of air displacement.

Test at least 5 samples with the felt side up and 5 samples with the wire side up, and average the

*This method has been approved as a tentative standard by the Paper Testing Committee. Criticisms are earnestly requested and should be sent to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York 17, N. Y. This standard is in all essentials the same as A.S.T.M. Standard Designation D 202.

results. If the mean value of the highest and lowest reading differs from the average of all the readings by more than 10%, additional samples shall be tested until there is agreement within these limits. An irregular sheet of paper may, therefore, require more than ten tests. An isolated very high or very low reading, which is not repeated in duplicate, shall be discarded when a consistent average is obtained without the abnormal reading.

Report

The average number of seconds required for the displacement of 100 ml. of air through an area of 1 square inch of the paper shall be reported as the Air Permeability.

Reproducibility of Results

The agreement to be expected between duplicate series of independent tests is approximately as follows:

Air Permeability, *seconds*	Reproductibility, %
40	5
100	6
200	8
300	10

Additional Information

American Society for Testing Materials Designation D 202-38T, Air Resistance, describes the apparatus having an open-top inner cylinder.

Reference

"First Report of the Paper Testing Committee to the Technical Section of the Papermakers' Association of Great Britain and Ireland", pp. 62-66 (1937).

Flammability of Treated Paper and Paperboard*

TAPPI Suggested Method T 461 sm-43

This method is applicable to papers and paperboards of all types that have been treated to prevent the spread of flame when ignited. Such papers are commonly designated as "flame-proofed."

Apparatus

1. A stopwatch.
2. A metal frame designed to hold a specimen of paper 2¾ inches wide and 8¼ inches long by gripping ⅜ inch of each long edge in a clamp. The specimen with an area 2 by 8¼ inches thus exposed is held with the long axis in a vertical position.
3. The test flame is supplied by a Bunsen or Tirrill gas burner having a tube of ⅜ inch inside diameter.

Test Specimen

The test specimen shall consist of a piece of the sample 2¾ inches wide and 8¼ inches long. Specimens shall be cut in both principal directions of the sheet.

Procedure

Clamp the test specimen in the metal frame with the long axis in a vertical position. Adjust the test flame to a height of 1½ inches with the air supply closed. Apply the test flame to the center of the lower edge of the test specimen, taking precaution to protect it from drafts, at a level that will make the distance from the top of the burner tube to the edge of the specimen ¾ inch. Apply the test flame for 12 seconds and then withdraw. Record with a stop watch the duration of the flaming. Measure the height that is charred to the extent that it will separate readily when crumpled between the thumb and forefinger. Not less than 3 specimens shall be tested in each principal direction of the sheet.

Report

Results shall be reported as *flaming time*, which is the average time in seconds that the specimens continue to flame after the burner flame is removed, and as *char length*, which is the average height of the charred or burned areas in inches, measured from the bottom edge of the piece to the nearest ⅛ or 0.1 inch.

Additional Information

This method is based on extensive investigations by the Fire Resistance Section of the National Bureau of Standards. It has been recommended for use in certain Government specifications, particularly for the fire resistance of blackout materials. These specifications require that if a material is to be classed as "flameproof", the flaming time should not be more than 2 seconds and the length of char not more than 3½ inches, with the maximum length of char for any one specimen not over 4½ inches.

Treated paper which fails to pass the above requirements may be given a secondary test to find the relative effectiveness of the flameproofing treatment as follows:

Cut specimens and clamp them in the frame as previously described. Then turn the frame so that the specimen is in a horizontal position, not less than 6 inches above the work bench or table, and apply the test flame as in the vertical test. Note the length in inches of the burned area and the time of flaming, and calculate the *rate of flame travel* in inches per minute, the time including the period of application of the test flame.

*This method is suggested by the Paper Testing Committee as being the most suitable to date. It is not, however, a TAPPI Standard. Criticisms are earnestly requested and should be sent to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York 17, N. Y.

Effect of Chemical-Wood Ratio in Pulping Douglas Fir by the Sulphate Process*

By J. Stanley Martin[1] and Mark W. Bray[1]

Abstract

Systematic variation of the chemical-wood ratio in the sulphate process can be used as a measure of the relative ease of fiberization among species. Chemical consumption and yields of screened pulp and screenings in the pulping of Douglas fir, when compared with previously obtained data on longleaf pine, indicated that Douglas fir fiberizes slightly more readily then does longleaf pine. The values obtained at given chemical-wood ratios for total pulp yields, chemical consumptions, bleach requirements, and pulp strength were generally of the same magnitude for both Douglas fir and longleaf pine. The significant differences in pulp properties that seemed capable of distinguishing the Douglas fir from longleaf pine were a 1.0 gram per pound per ream higher tearing resistance, a 3% higher alpha-cellulose content for the well-cooked pulps, and a darker color for the unbleached raw pulps. Changes in the chemical-wood ratio had less effect on the length of time needed to beat the Douglas fir pulps to a certain freeness than on the time necessary for the longleaf pine pulps to reach the same freeness.

Previous investigations at the Forest Products Laboratory *(1, 2)* have indicated that the effects attributable to the chemical-wood ratio[2]—that is, the amount of total active chemicals charged per unit weight of wood, are useful criteria for estimating the chemical requirements, the suitability of a species for pulping, and the relative ease with which various species may be reduced to pulp by the alkaline processes. The variation in pulp yields, strengths, chlorine requirement, and chemical composition of pulps obtained through a systematic variation of the chemical-wood ratio not only indicates the range of possibilities of a particular species for the production of pulps with varying properties, but also affords a means of comparing one species with another.

Pulping experiments involving this particular variable were, therefore, applied to Douglas fir by the Forest Products Laboratory both for comparison with such species as longleaf pine and for furnishing additional data which might be of aid in increasing the utilization of this large source of raw material by the pulping industry. Vast quantities of this species, in fact twice the amount of all other western pulpwoods both as standing timber and as waste wood, are available as a source of pulpwood. The present consumption of only 155,000 cords per year might be expanded considerably if, by means of increased knowledge of the pulping of this species, pulps of more satisfactory quality could be produced.

Selection and Preparation of Wood

The wood selected for the pulping experiments was a young, rapid-growth, Douglas fir *(Pseudotsuga taxifolia)* tree from Skamania county, Washington. The tree was obtained from mountainous country at an elevation of 1200 feet. The entire merchantable portion of a single tree (No. 6 of Shipment 1466) had been cut into 27 4-foot bolts, which in turn were divided into from 2 to 4 sectors depending on the size of the bolt. Immediately upon arrival of the material at the Forest Products Laboratory, sample 1-inch-thick transverse sections for chemical analysis and for the determination of the physical properties were sawed from sectors of the butt and top logs and from logs located approximately at 25, 50, and 75% of the total merchantable height of the tree. The data given in Table I are arithmetic averages of the values obtained from the several pieces. The tree had an average age of 61 years, a growth rate of 7.6 rings per inch, a density of 25.5 pounds per cubic foot, and 73.6% of springwood by volume. A comparatively high total cellulose content of 61.4% and a low lignin content of 26.9%, coupled with low extractives and low solubility in 1.0% sodium hydroxide solution, presaged soundness of the wood and good pulp yields by the sulphate process for this sample of Douglas fir pulpwood.

TABLE I.—PHYSICAL PROPERTIES, CHEMICAL ANALYSIS, AND COLOR OF DOUGLAS FIR PULPWOOD (TREE 6, SHIPMENT 1466)[1]

Physical properties:	
Specific gravity, moisture-free weight/green volume	0.409
Density, moisture-free weight/green volume, pounds per cubic foot	25.5
Springwood, by volume (%)	3.6
Heartwood, by volume (%)	59.0
Rate of growth (rings per inch)	7.6
Diameter (inches)	18.0
Average age (years)	61.0
Chemical analysis of pulpwood chips (moisture-free basis):	
Cellulose—total, Cross and Bevan (%)	61.4
alpha (%)	45.2
Lignin (%)	26.9
Total pentosans (%)	9.3
Solubility in alcohol-benzene (%)	3.2
Ether (%)	.5
Hot 1% sodium hydroxide solution (%)	12.5
Hot water solubility (%)	3.4
Color analysis:	
Heartwood, Ives readings	
Red (parts)	65
Green (parts)	35
Blue (parts)	25
Sapwood, Ives readings	
Red (parts)	78
Green (parts)	59
Blue (parts)	47

[1] Arithmetic average of values obtained from samples taken at 4, 26, 48, 70, and 100% of the height of the merchantable trunk. Merchantable trunk, 108 feet in length.

For the pulping experiments herein described, sectors from 13 hand-barked bolts representative of the wood of the entire tree were converted into ⅝-inch chips, which were run over a shaker screen and further sorted by hand to remove sawdust, slivers, or oversized pieces. The entire batch of screened chips was thoroughly mixed, thus assuring uniform material for 30 autoclave digestions. The mixed chips were stored in covered metal containers in a room

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 15-18, 1943.

[1] Member TAPPI: Associate Engineer and Senior Chemist, respectively, Forest Products Laboratory, Forest Service, U. S. Department of Agriculture. Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

[2] Chemical-wood ratio, commonly referred to as chemical ratio, is not to be confused with the ratio of caustic soda to sodium sulphide in sulphate cooking liquors. In all the experiments here reported these two components were maintained in the same constant ratio of 3 to 1.

EFFECT OF CHEMICAL-WOOD RATIO IN PULPING DOUGLAS FIR BY THE SULPHATE PROCESS*

TABLE II.—SULPHATE PULPING OF DOUGLAS FIR (PSEUDOTSUGA TAXIFOLIA)—EFFECT OF CHEMICAL-WOOD RATIO ON YIELD AND PULP PROPERTIES
(Shipment 1466)

Digestion designation, No.	Cooking[1] and yield data: Wood: Moisture content, %	Wood: Weight moisture-free, Lb.	Chemicals: Charged per 100 pounds moisture-free wood: Total, Pounds	Charged: Total effective alkali as NaOH, Pounds	Charged: Volume of liquor, Gallons	Chemicals: Consumed: Ratio of combined to total alkali, %	Consumed: On moisture-free wood, %	Consumed: Total effective alkali as NaOH, %	Consumed: Black Liquor: Density at 15° C., °B.	Black Liquor: Total solids, %	Black Liquor: Heat value per pound moisture-free residue, B.t.u.	Yield moisture-free pulp: Screened, %	Yield: Screenings, %	Yield: Total, %	Interpolated test beater strength data on unbleached pulp; ream size, 25" x 40"-500. Tests made at 72° F. and 65 per cent relative humidity: Freeness (Schopper), Cc.	Time of treatment, Minutes	Bursting strength, Points per pound per ream	Tearing resistance, Grams per pound per ream	Tensile strength, Pounds per square inch	Solid fraction, Ratio	Bleach requirement: Ives reading: Standard bleach added, %	Red, Parts	Green, Parts	Blue, Parts	Chemical analysis: Cellulose: Total, %	Alpha, %	Lignin, %	Total pentosans, %	Chlorine number (Roe), %
742	19.8	4.0	15.00	12.57	36.0	95.5	14.4	12.0	11.2	16.7	6703	19.3	37.4	56.7	825	40	0.96	2.7	3800	0.37	0	22	14	11	84.4	72.2	15.4	6.5	14.0
743															800	45	1.02	2.6	4200	.38	25	35	21	15					
744															700	63	1.15	2.3	5100	.40	40	48	31	20					
															550	82	1.25	2.1	6000	.42									
754	16.8	4.0	16.25	13.61	39.0	93.3	15.2	12.7	11.4	17.2	6737	39.2	14.2	53.4	825	43	.98	3.2	4400	.37	0	26	17	13	87.6	75.1	10.4	6.8	11.7
755															800	53	1.05	3.1	4700	.38	25	45	29	20					
756															700	74	1.18	2.9	5800	.40	40	60	42	30					
															550	92	1.27	2.6	7000	.41									
739	18.1	4.0	17.50	14.66	42.0	90.8	15.9	13.3	11.2	16.5	6882	48.0	3.1	51.1	825	38	1.03	3.3	4300	.35	0	29	19	15	89.0	77.6	9.3	6.7	9.3
740															800	44	1.08	3.3	4800	.37	25	56	40	27					
741															700	63	1.19	3.2	6000	.40									
															550	82	1.28	2.8	6700	.42									
736	18.7	4.0	18.75	15.71	45.0	89.5	16.8	14.0	11.1	16.3	6831	48.0	1.5	49.5	825	33	1.04	3.2	4300	.36	0	32	21	18	92.0	78.8	6.3	7.8	7.5
737															800	40	1.10	3.1	4500	.37	25	64	48	35					
738															700	56	1.23	2.9	5500	.39	40	86	74	62					
															550	76	1.32	2.7	6900	.41									
733	18.9	4.0	20.00	16.75	48.0	87.6	17.5	14.7	11.1	16.3	6644	46.7	.8	47.5	825	35	1.08	3.3	4400	.36	0	35	24	19	93.5	79.4	4.6	6.5	6.2
734															800	43	1.13	3.3	4800	.37	25	69	53	40					
735															700	66	1.25	3.2	5800	.40	30	79	64	52					
															550	84	1.34	2.9	6800	.42	40	86	76	66					
727	18.7	4.0	22.50	18.85	54.0	81.4	18.3	15.3	10.6	15.4	6457	45.8	.3	46.1	825	34	1.08	3.5	4800	.40	0	39	27	22	94.0	80.7	4.1	6.5	5.1
728															800	40	1.14	3.4	5000	.41	25	85	74	62					
729															700	60	1.25	3.1	5900	.44	30	90	82	73					
															550	82	1.33	2.8	6700	.46									
724	19.2	4.0	25.00	20.94	60.0	76.1	19.0	15.9	10.7	14.7	6296	45.3	.1	45.4	825	34	1.04	3.3	4900	.40	0	40	29	25	94.7	81.1	2.9	6.2	4.2
725															800	42	1.11	3.2	5200	.41	25	83	74	68					
726															700	62	1.27	2.9	6200	.44	30	88	83	77					
															550	83	1.36	2.7	7300	.47									
745	18.2	3.5	27.50	23.03	66.0	72.3	19.9	16.7	10.5	14.4	6028	44.3	.1	44.4	825	25	1.05	3.7	4400	.36	0	42	30	24	96.4	83.0	1.9	7.9	3.7
746															800	31	1.13	3.7	4800	.38	25	84	77	68					
747															700	51	1.29	3.5	5700	.41	30	87	81	76					
															550	74	1.36	3.2	6400	.43									
748	19.9	3.5	30.00	25.13	72.0	69.3	20.8	17.4	10.5	13.9	5892	44.3	.1	44.4	825	23	.96	3.6	4300	.37	0	42	30	25	96.2	82.4	2.3	6.0	3.6
749															800	30	1.03	3.7	4500	.38	25	87	85	78					
750															700	48	1.22	3.6	5500	.41	30	89	86	82					
															550	70	1.32	3.2	6500	.44									
751	17.7	3.0	35.00	29.32	84.0	63.9	22.4	18.7	10.2	13.4	5402	44.6	.1	44.7	825	26	.99	3.7	4000	.37	0	42	32	25	94.6	82.6	1.0	6.1	3.1
752															800	32	1.05	3.7	4400	.38	25	89	83	75					
753															700	50	1.16	3.6	5500	.41	30	89	85	81					
															550	72	1.25	3.4	6600	.43									

[1] All digestions were made in 3.7-gallon steam-jacketed, spherical, rotary autoclaves heated with indirect steam.
With the exception of chemical-wood ratio and volume of cooking liquor, which were varied, all digesters were made under the same conditions, as follows:

Concentration of cooking chemicals at start.... Sodium hydroxide (calculated as NaOH).....33.33 grams per liter
Sodium sulphide (calculated as Na_2S).....16.67 grams per liter
Total chemicals .....50.00 grams per liter

Maximum digestion temperature.....170° C.
Temperature-pressure increase period.....1½ hours
Duration at maximum temperature.....1½ hours

maintained at 38° F. and 95% R. H. The material was sampled for moisture determination just prior to cooking.

Pulping Experiments

The same appartus, procedures, and methods were employed for this work as for the earlier autoclave pulping experiments on longleaf pine *(1)*. Digestions were made in triplicate. After separate yield determinations had been made on the three digestions to check the precision of the procedure, the pulps were mixed and sampled for physical and chemical testing. Standard Forest Products Laboratory methods were used for the determination of strength properties, bleach requirements, color, and chemical analysis of the pulps.

Digestions were made in which the chemical-wood ratio was varied from 15 to 35% in small increments. In all cases, the total initial concentration of chemicals (calculated as sodium hydroxide and sodium sulphide) in the cooking liquor was held constant at 50 grams per liter. The moisture in the chips, which averaged approximately 18%, was included in the volume and concentration figures, and the ratio of chemicals to wood was calculated on the weight of moisture-free wood charged. Since the total initial concentration was constant, the volume of cooking liquor became a dependent variable, increasing as the chemical-wood ratio was increased. As previously mentioned, the ratio of sodium hydroxide to sodium sulphide was 2 to 1, a proportion giving a sulfidity of 33.9%. The results of the autoclave digestions are reported in Table II.

Yield and Chemical Consumption

In Fig. 1 the yield and chemical consumption data recorded in Table II are plotted against the various chemical ratios employed. The curves for the Douglas fir digestions showed the same general trends as those previously reported for longleaf pine *(1)*.

As the chemical-wood ratio was increased from 15 to 25%, the total yield of pulp decreased sharply. From chemical-wood ratios of 25 to 35% inclusive, the decrease in total yield of pulp was very slight, the differences usually falling within the margin of

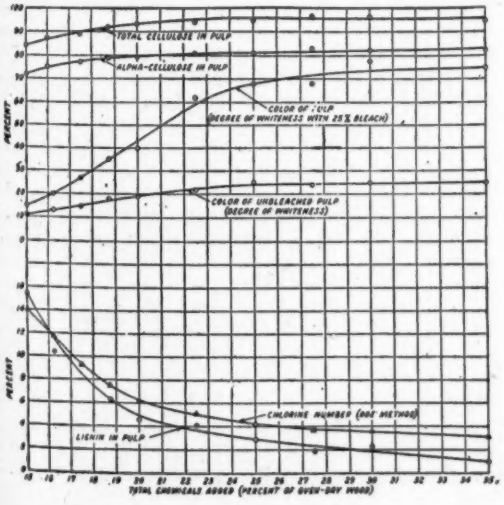
TOTAL CELLULOSE IN PULP
ALPHA-CELLULOSE IN PULP
COLOR OF PULP (DEGREE OF WHITENESS WITH 25% BLEACH)
COLOR OF UNBLEACHED PULP (DEGREE OF WHITENESS)
CHLORINE NUMBER (DOX METHOD)
LIGNIN IN PULP
PERCENT
TOTAL CHEMICALS ADDED (PERCENT OF OVEN-DRY WOOD)

FIG. 2
Effect of Chemical-Wood Ratio on the Properties of Douglas Fir Sulphate Pulps

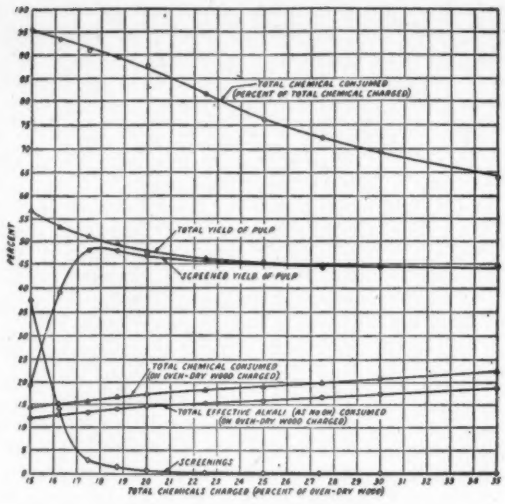
TOTAL CHEMICAL CONSUMED (PERCENT OF TOTAL CHEMICAL CHARGED)
TOTAL YIELD OF PULP
SCREENED YIELD OF PULP
TOTAL CHEMICAL CONSUMED (ON OVEN-DRY WOOD CHARGED)
TOTAL EFFECTIVE ALKALI (AS NaOH) CONSUMED (ON OVEN-DRY WOOD CHARGED)
SCREENINGS
PERCENT
TOTAL CHEMICALS CHARGED (PERCENT OF OVEN-DRY WOOD)

FIG. 1
Effect of Chemical-Wood Ratio on Yield of Pulp and Chemicals Consumed in the Pulping of Douglas Fir by the Sulphate Process

experimental error for the determination. With an increase in the percentage of chemicals added, the yield of screened pulp increased very rapidly at first, passed through a maximum, and then decreased only slightly. The maximum screened yield of 48% was obtained at chemical-wood ratios of 17.5 and 18.75%. As the chemical-wood ratio was increased from 15 to 17.5%, the yield of screenings dropped from 37.4 to 3.1%. The addition of 2.5% more chemical caused the screenings yield to drop below 1.0%. Further addition of chemicals to 35% decreased the yield of screenings to 0.1%.

The percentages of total chemical and total effective alkali consumed, based on moisture-free wood charged, closely approach linear relationships to the percentage of total chemicals charged, with slopes indicating a nearly uniformly decreasing chemical efficiency with increasing chemical ratio (Fig. 1). There is no marked flexure in these curves, such as might be expected from a curve showing the yield of screened pulp which passes through a maximum. In spite of the fact that the pulp yields changed only slightly at chemical-wood ratios above 20%, where the greater effect was on lignin removal, the nearly constant decrease in efficiency of chemical consumption was maintained. If these data are compared with the previous work on longleaf pine *(1)* it will be noted that the efficiency of chemical consumption for both species was almost identical. The exception of a 2% higher chemical efficiency for Douglas fir at the 15% chemical ratio should be somewhat discounted as a measure of the ease of fiberization for the two species, because these digestions produced extremely raw pulp. Comparison of the graphs representing yields of screened pulp for the two species indicates that Douglas fir fiberizes slightly more readily than longleaf pine.

Chemical Composition and Bleach Requirement

The total cellulose, alpha-cellulose, lignin, and bleach requirement data given in Table II are plotted against the ratio of chemical to wood charged in Fig. 2. Both the total cellulose and the alpha-cellulose content of the resulting pulps increased as the chemical-wood ratio was increased, but for chemical ratios

above 25% the change was slight and possibly within the range of experimental error. The highest alpha-cellulose values were obtained with the higher chemical-wood ratios. The percentage of lignin in the pulps decreased sharply at first and then more slowly as the chemical-wood ratio was increased, and as the amount of lignin removed approached the maximum present in the wood.

As the chemical-wood ratio was increased, the degree of whiteness of the unbleached pulps also increased, as shown by the Hess-Ives blue color readings. The change in whiteness with change in chemical-wood ratio was very marked after the pulps had been treated with 25% of bleaching powder in a single-stage bleaching operation. Increasing the chemical-wood ratio caused a decrease in chlorine number from 14.0 to 3.1%. The low chlorine numbers obtained with chemical-wood ratios of from 25 to 35% indicate that these pulps can be bleached to a high degree of whiteness.

Like the yield and chemical consumption data, the trends in the chemical composition and bleach requirement data for the Douglas fir pulps were the same as those for the longleaf pine.

Strength Properties of the Unbleached Pulps

Test beater strength data interpolated to a given Schopper freeness value and based on a ream size of 25 by 40 inches—500 are reported in Table II. Comparison of the physical properties of pulps beaten to equal freeness values (550 and 700 cc., Schopper-Riegler), shows that the bursting strengths of the pulps approach a maximum for chemical-wood ratios of 25 to 27.5%. At freenesses of 825 to 800, which correspond to pulps that have been only slightly beaten, the point of maximum bursting strength tends to shift to the vicinity of the 20 to 25% chemical-wood ratios. The bursting-strength values for the chemical-wood ratios of 15 and 35% are practically identical for the entire range of freenesses, 825 and 550 cc. Schopper-Riegler.

The trend in tearing resistance showed an increase as the quantity of chemicals used in cooking was increased. The total increase at any given freeness was approximately 1.0 gram per pound per ream. Half of this increase took place at a chemical-wood ratio of less than 17.5%. The differences in values for tensile strength caused by changes in the chemical-wood ratio were, in general, very small. After a moderate increase between values for the 15 and 16.25% chemical-wood ratios, the trend was only slightly downward with further increases in the chemical-wood ratio. At any given freeness, the sheet density, as indicated by the solid fraction, was higher for chemical-wood ratios of 22.5 and 25% than for any of the others.

The beating time necessary to obtain a given freeness decreased slightly as the chemical-wood ratio was increased. When compared with the longleaf pine pulps made under identical conditions, the Douglas fir pulps required shorter beating times for the lower chemical-wood ratios (raw pulps) but required longer beating times for pulps cooked with larger quantities of chemicals.

It is interesting to note that the bursting and tensile strength values of pulps prepared from both Douglas fir and longleaf pine with chemical-wood ratios ranging between 16.25 and 25%, should fall so nearly within the same ranges. The range of values for bursting strength for the Douglas fir sulphate pulps was 0.98 to 1.36 points as compared with 1.00 to 1.37 points for the longleaf pine. A similar comparison for tensile strength shows the range of values to be 4300 to 7300 and 4700 to 7400 p. s. i. respectively, for the two species. However, this similarity does not hold for the tearing resistance properties of the two species, since the Douglas fir pulps were approximately 1 gram per pound per ream higher in tearing strength than any of those made from the longleaf pine. For instance, at a freeness of 800 and a chemical ratio of 20%, the Douglas fir sulphate pulp had a tearing resistance of 3.3 compared with 2.3 grams per pound per ream for the longleaf pine pulp. Although a difference of 1 gram per pound per ream is not to be expected between these species in all cases, especially if wood of widely different physical characteristics is being compared, yet a high tearing strength is, apparently, a characteristic of Douglas fir sulphate pulps.

Conclusion

In the pulping of Douglas fir and longleaf pine by the sulphate process the two species were found to be quite similar in certain respects, while, in others, considerable differences were noted between them. With an increase in chemical ratio, both showed the same trends for pulp yields, chemical consumption, chemical composition of the pulps, bleach requirements, degree of whiteness, and strength properties. Comparison of the pulps made at the same chemical-wood ratio indicated, with the exception of those made at the lowest chemical-wood ratio, only small differences in the values for yields of screened pulp and screenings, chemicals consumed, color of the bleached pulps, chlorine number, total cellulose, lignin, and bursting and tensile strengths.

On the other hand, the two species were found to be considerably different in the following respects, even when pulped under the same conditions:

At a chemical ratio of 15%, Douglas fir gives a screened yield of 19.3% as compared with only 8.3% for the longleaf pine, corresponding values for screenings from these two species being 37.4 and 50% respectively. The yields of screened pulp pass through a maximum at chemical-wood ratios of about 17.5 to 18.75% for Douglas fir, whereas the maximum point for longleaf pine is between chemical-wood ratios of 18.75 and 20. The maximum screened yield of Douglas fir is, therefore, reached with a less drastic chemical action than that required for longleaf pine. Douglas fir reaches its highest screened yield with a chemical consumption of 13.3% of effective alkali, based on moisture-free wood, or 15.9% of total chemical. Longleaf pine has not yet attained its maximum screened yield at these consumption values.

The color of the unbleached, raw pulps from Douglas fir was darker than that of the longleaf pines.

The Douglas fir pulps were 1 gram per pound per ream higher in tearing strength than those from longleaf pine.

Changes in the chemical-wood ratio had a greater effect on the time required for beating longleaf pine pulps than for those made from Douglas fir. At a given chemical-wood ratio, a shorter time was required for raw Douglas fir pulps than longleaf pine when cooked with the smaller amounts of chemicals; but a longer time was required for those cooked to

lower yields with large amounts of chemicals than was needed in cooking longleaf pine.

Systematic variation of the chemical-wood ratio in sulphate pulping has indicated the lowest amounts of chemicals, both charged and consumed, at which maximum fiberization of Douglas fir pulpwood chips occurs. Below this point small changes in the amounts of chemicals cause marked changes in the percentages of screenings and yields of screened pulp. Although any increase in chemicals added above this point may further slightly reduce screenings and increase pulp purity, the yield of screened pulp has passed the maximum.

The similarity in pulping behavior of this shipment of Douglas fir with another of longleaf pine indicates that Douglas fir has distinct potentialities as a raw material for the paper industry.

Systematic variation of the chemical-wood ratio in the sulphate process can be used as a measure of the relative ease of fiberization among species.

Literature Cited

1. Bray, Martin, and Schwartz. *Paper Trade J.* 105, No. 24:39 (Dec. 9, 1937).
2. Bray and Martin. *Paper Trade J.* 113, No. 25:35 (Dec. 18, 1941).

Felt Facts

Felt Facts is a new booklet just issued by the Felt Association, Inc. of New York, and tells the story of the manufacture and of some of the myriad uses of wool felt. It is written in simple, non-technical style for the layman and the various steps in the manufacturing process, about which the average person knows very little, are described and illustrated.

The Felt Association was prompted to issue the booklet because the hundreds of new uses, civilian and military, which have been found for this remarkable, versatile fabric since the war began have brought many inquiries from a wide range of industries.

Attention is called to its many applications in engineering and mechanical fields as an alternate for rubber, cork, certain fabrics and plastics, and other priority materials—in short, how it is helping to bring an earlier Victory. The importance of wool felt in improved technique vibration-isolation, filtering, grinding and polishing, and other processes ranging from minute filters in tiny hypodermic needles to block-buster washers and padding for eighty-ton tanks, is revealed. The modern manufacture of this oldest of fabricated fibre material, is interestingly portrayed in sixteen drawings by the noted artist, Helene Carter.

Copies may be obtained gratis by addressing Korbel & Colwell, Inc., Public Relations Counsel, 480 Lexington Avenue, New York (17) N. Y.

Buys Greene Machine Co.

WATERTOWN, N. Y., September 13, 1943. — Announcement is made here that William C. Harley, who purchased the business and plant of the Greene Machine Company in 1941, has completed its sale to Gordon Freysell at a price understood to have been in the neighborhood of $25,000. For several years the machine shop has housed a lucrative business in paper slitters and small machined tools and equipment. A machine repair business has also been conducted. The new owner has been connected with an establishment in another section of the city for some time.

G. E. Announces New Box Board Tester

A new box board tester for accurately determining the strength of fibre box board and similar materials has been announced by the Special Products Division of the General Electric Company. The new tester will determine the strength of box board from .014-inch liner to .140-inch solid kraft, as well as waterproof boxing material used for oversea shipments which must withstand rough handling and extremes of moisture and temperature. It will also measure the strength, without deforming or flattening the corrugations, of corrugated board from the lightest nontest grade to the heaviest grade of double wall board, as well as thin plywood and vulcanized fibre.

Mounted on a metal base, the tester is simple in construction, having only one moving part. It consists of a pendulum on the end of which is a rod bent to form an arc of 90 degrees, with a triangular metal point one inch in height at the end. This point is

SHOWING AN EXPERIMENTAL MODEL OF THE TESTER BEING USED BY R. L. BEACH, WHO DEVELOPED IT.

shaped like the corner of a box in order to simulate actual shipping conditions, since the majority of boxes damaged in transit are punctured by the corners of other crates and boxes being forced against them. The simulation of actual shipping conditions also determined the one-inch height of this point, as punctures penetrating such boxes to a depth of an inch or less rarely injure the contents.

In operation, the unit holds the material to be tested firmly between two clamping plates which are level with the axis of the pendulum. The pendulum is operated by a trigger, and as this is tripped and the released pendulum swings through its arc, the number of degrees less than 180 degrees through which it swings is a measure of the energy dissipated in puncturing and bending the material being tested. The tester's scale, which has an indicating hand, is calibrated so that the reading is the actual inch-ounces per inch of tear made during the test.

The design of the new box board tester is based on a unit developed by R. L. Beach, General Electric engineer, and used by G.E. for several years in establishing the specifications and controlling the quality of its purchased fibre containers.

H. F. McIntyre Goes with Penn Salt

The Pennsylvania Salt Manufacturing Company of Philadelphia announces the addition of Horace F. McIntyre to its Pennsalt Cleaner Division as a sales and service representative to cover the Philadelphia territory.

A Further Comparison of Sodium- and Calcium-Base Sulphite Acids II*

The Effect of Decreasing the Time to Maximum Temperature with a Corresponding Reduction in Total Cooking Time

By M. O. Schur[1] and E. G. Ingalls[2]

Abstract

In the pulping of a mixture of red spruce and balsam fir the previously observed faster action of sodium-base sulphite cooking acid as compared with calcium-base acid, each containing initially 5.0% free and 1.0% combined SO_2, has been confirmed. The difference in rates of pulping was found to decrease slightly as the time taken to reach maximum digester temperature was reduced. However, the extent of fiber liberation, as judged by freedom from screenings, decreased much more rapidly in the case of the cooks with calcium-base liquor as the time to maximum temperature was decreased. No evidence of "burning" of the chips by either acid was noted when the time to reach maximum temperature (290° F.) was as low as 1½ hours and the total cooking time was 4½ hours.

It has been reported by Schur and Baker *(1, 2)* that with cooking acids containing 1.0% combined SO_2 and 5.0% free SO_2, a given degree of cooking, as measured by the permanganate number of the unbleached pulp, was realized in a shorter cooking time with sodium-base acid than with calcium-base acid, when a mixture of red spruce and balsam fir was digested according to given time-temperature schedules and under the same maximum digester pressure. The temperature schedules followed were typical of commercial practice in the manufacture of a strong pulp of medium bleachability in a mill using a cold-acid system. These studies have now been extended to include cooks in which the time to maximum temperature was reduced systematically from about 9 hours to 2 hours, with the maximum temperature at 290° F. (143° C.) in every case. A maximum pressure of 85 p.s.i. (gage) was maintained until 1½ hours before the blow, when the digester pressure was relieved gradually to 58 p.s.i. for the blow.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 15-18, 1943.

[1] Member TAPPI; Director of Research and Development, Brown Co., Berlin, N. H.
[2] Research Chemist, Brown Company, Berlin, N. H.

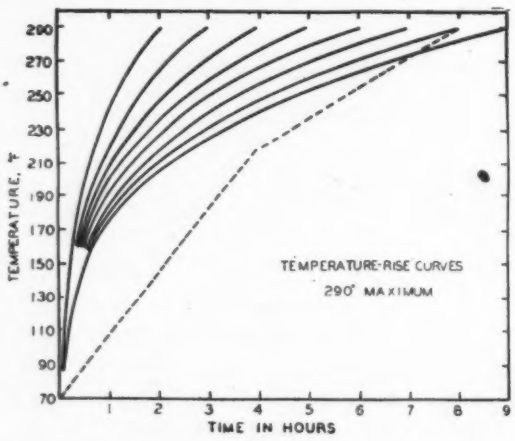

FIG. 1
Temperature-Rise Schedules

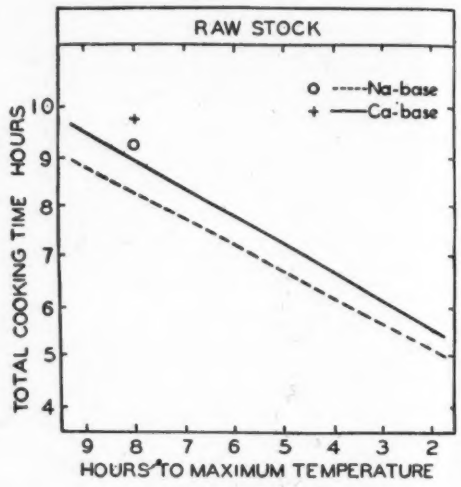

FIG. 2
Effect of Reducing Time to Maximum Temperature on Total Cooking Time to Yield Pulp of 12.0 Permanganate Number

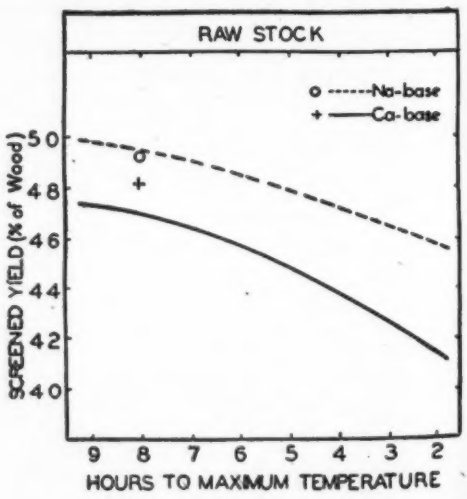

FIG. 3
Effect of Reducing Time to Maximum Temperature on Yield of Pulp of 12.0 Permanganate Number

TABLE I.—TYPICAL SIEVE-TEST

Retained on	Weight, %
1 inch mesh	24.2
¾ inch	32.4
½ inch	27.3
¼ inch	14.3
Fines	1.8
Thickness (fraction retained on 1 inch mesh)	
Thickness, inches	Weight, %
0-½	14.6
½-¾	40.5
¾-1	44.9
Thickness (fraction retained on ¾ inch mesh)	
Thickness, inches	Weight, %
0-½	14.2
½-¾	64.2
¾-1	21.6

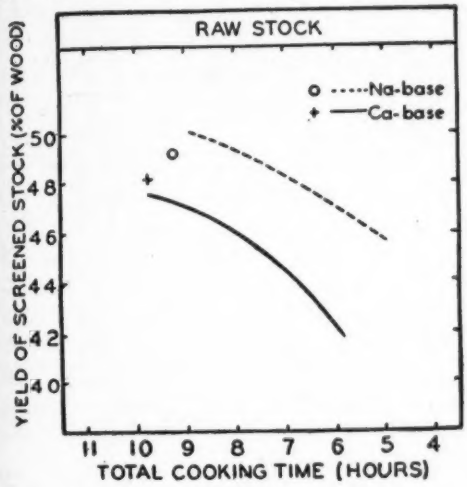

FIG. 3-A

Effect of Reducing Total Cooking Time on Yield of Pulp of 12.0 Permanganate Number

Wood

The wood digested was a mixture of 70% red spruce and 30% balsam fir, on a moisture-free basis. Chips were prepared from each species separately with a three-blade rotary chipper of commercial design. After the chips had been tested for moisture content, the two species were mixed in the stated proportions. The logs as chipped contained between 40 and 50% moisture. A typical screen test on the chips is shown in Table I.

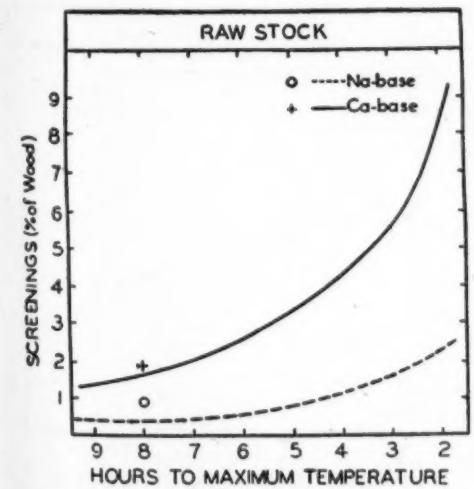

FIG. 4

Effect of Reducing Time to Maximum Temperature on Amount of Screenings

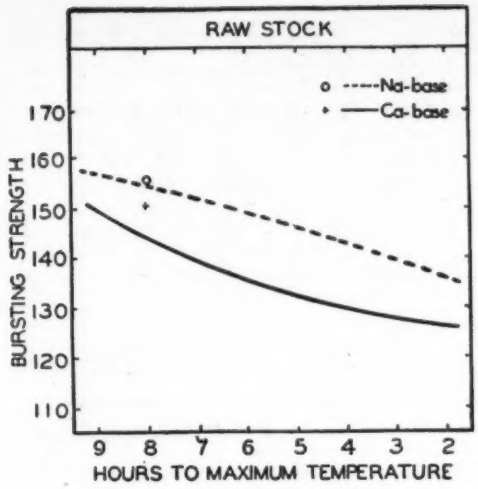

FIG. 5

Effect of Reducing Time to Maximum Temperature on Bursting Strength of Raw Stock

Temperature Schedules

In Fig. 1 are given the temperature-rise schedules to the maximum temperature followed in the present study. These are drawn in solid lines. When the maximum temperature had been reached it was maintained constant to the end of the cook. For purposes of comparison, several cooks were made with one temperature-rise schedule used in the earlier work above referred to, which is characterized by a much slower rate of temperature-rise, as shown by the curve drawn in broken line. Neither water nor nitrogen were injected into the digesters during any of these cooks.

Several cooks were made according to each temperature-rise schedule, similar in all respects except that the maximum temperature was maintained for slightly different lengths of time in order that a range of permanganate numbers of the unbleached stock would result.

Ratio of Cooking Acid to Wood

In every cook the weight of wood, on a moisture-

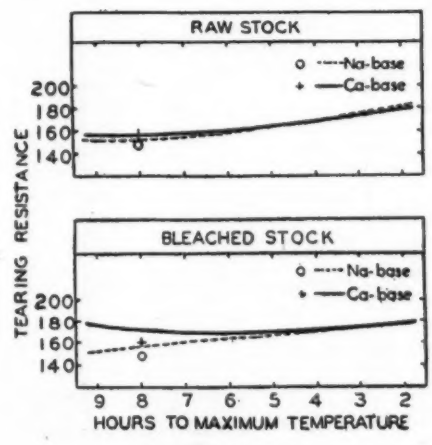

FIG. 6

Effect of Reducing Time to Maximum Temperature on Tearing Resistance of Raw Stock and Bleached Stock

free basis, was 4500 grams. Acid of the proper composition was added to give a total weight of combined SO_2 equal to 207 grams.

Apparatus and Method of Testing

The stationary digester described by Koon and Keepers *(3)* and the methods of testing previously described by Schur and Baker *(1)* were used.

Results

The data secured in the testing of the pulps were plotted against permanganate number and the various tests were read off from the individual plots at a point corresponding to a permanganate number of 12.0, selected as characterizing a pulp of good strength and of medium bleachability. The values thus interpolated were then plotted against the time in hours to maximum temperature to give a series of graphs showing the effect upon the various properties of the pulp at 12.0 permanganate number when the time to maximum temperature was varied. Thus, if the bursting strength was the test being studied, a graph was prepared of bursting strength plotted against permanganate number of the unbleached pulps obtained with a given temperature-rise schedule, and the bursting strength at permanganate number 12.0 was determined from the graph. This numerical value of bursting strength was then compared with values of bursting strength similarly obtained in other temperature-rise schedule experiments, and a curve (Fig. 5) was finally drawn of bursting strength at permanganate number 12.0 plotted against the time in hours to maximum temperature.

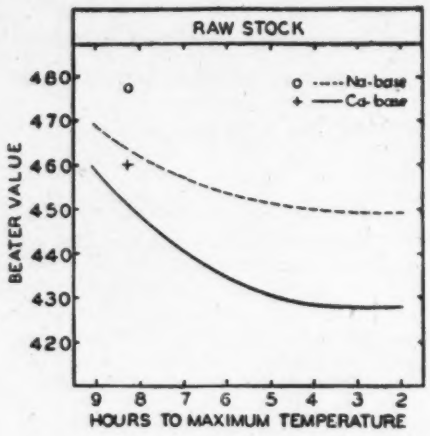

FIG. 7
Effect of Reducing Time to Maximum Temperature on "Beater-Value" of Raw Stock

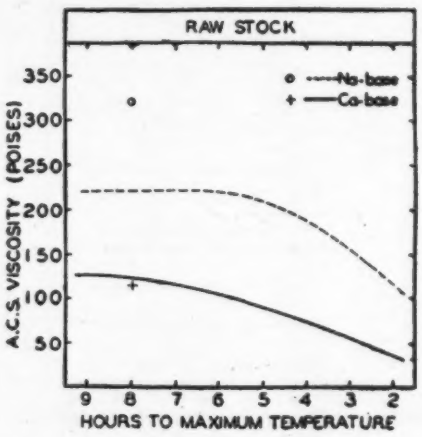

FIG. 8
Effect of Reducing Time to Maximum Temperature on Viscosity of Raw Stock of 12.0 Permanganate Number

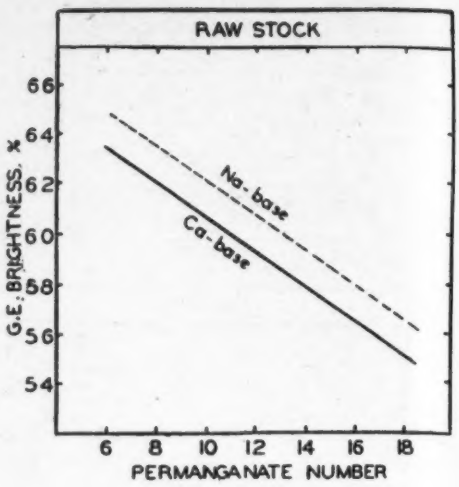

FIG. 9
Relation between Permanganate Number and Brightness of Raw Stock

The relationships thus obtained are given in Figs. 2 to 8 and 10 to 12. Indicated as a pair of points in these graphs are the data obtained with the relatively slow temperature-rise schedule used in the earlier work.

Unbleached Pulp

With each type of cooking acid, a straight-line relationship was observed between the total cooking time required to attain a pulp of permanganate number 12.0 and the time required to reach the maximum temperature. As shown in Fig. 2, the total cooking time was from about ¾ to ½ hour less with the sodium-base cooking liquor, the greater difference occurring during the longer cooks.

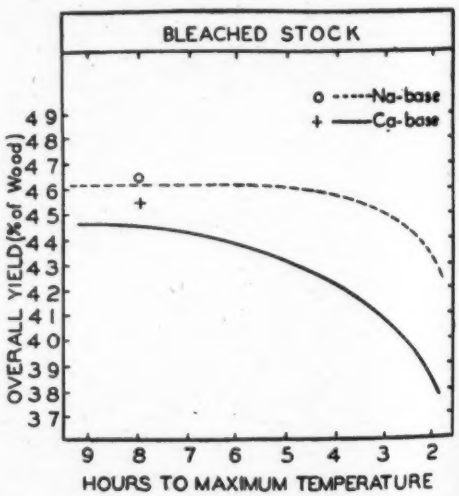

FIG. 10
Effect of Reducing Time to Maximum Temperature on Yield of Bleached Pulp

In Fig. 3 is summarized the relationship between the yield of screened raw stock and the time required to reach maximum temperature in the digester. It will be noted that the yield dropped as the time to maximum temperature was decreased, but that for any given number of hours to maximum temperature, the soda-base cooking acid gave an appreciably higher yield than the calcium-base. The difference in yield was greatest with the shortest time to maximum temperature.

In Fig. 3A the yields of Fig. 3 are plotted against the total cooking time rather than against the time to maximum temperature.

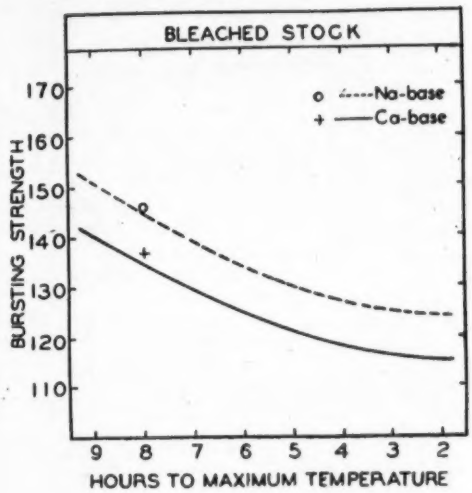

FIG. 11
Effect of Reducing Time to Maximum Temperature on Bursting Strength of Bleached Pulp

In Fig. 4 the per cent of screenings, based on weight of wood, is plotted against the time to maximum temperature. It is noteworthy that more screenings were obtained with the calcium-base cooking liquor than with the sodium-base cooking liquor for any given "hours to maximum temperature," and that this difference became very much greater as the time to maximum temperature was reduced.

Fig. 5 shows the relationship between bursting strength of beaten raw stock and the time taken to

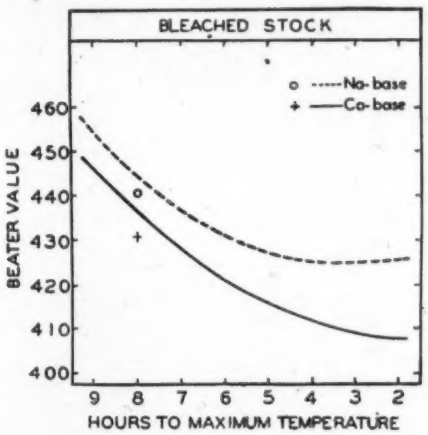

FIG. 12
Effect of Reducing Time to Maximum Temperature on "Beater-Value" of Bleached Stock

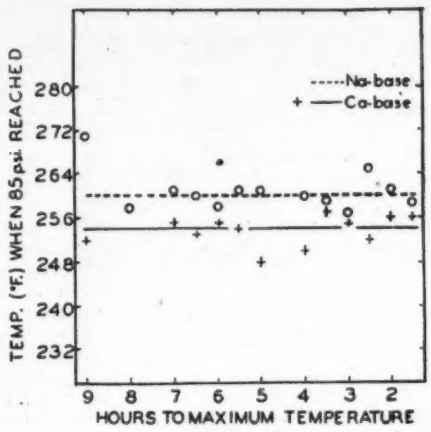

FIG. 13
Effect of Reducing Time to Maximum Temperature on Temperature at which Maximum Pressure is Reached

reach maximum temperature. The bursting strength was found to be higher for any given temperature-rise schedule in the case of the sodium-base pulps than in the case of the calcium-base pulps, but in either case the bursting strength dropped off as the time to maximum temperature was reduced.

In Fig. 6 data for tearing resistance of beaten stocks are plotted. It will be noted that for the raw stock there was but very little or no difference in tearing resistance according to whether sodium-base or calcium-base cooking acid was used.

In Fig. 7 the tearing resistance and bursting strength values are combined in the form of a convenient, though highly arbitrary "beater-value" which is defined as the sum of twice the bursting strength plus the tearing resistance. The difference between the results with the two cooking-liquor bases was found to be much greater as the time to maximum temperature was decreased.

Figure 8 deals with the relationship between the cuprammonium viscosity of the raw stock and the time to maximum temperature. It will be noted that the sodium-base liquor resulted in higher viscosities.

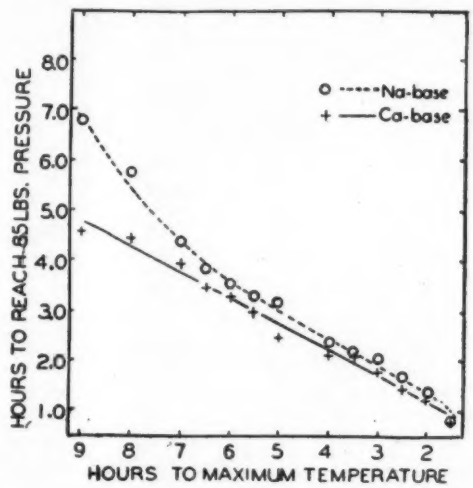

FIG. 14
Effect of Reducing Time to Maximum Temperature on Time to Maximum Pressure

Concerning the brightness of the unbleached pulps, it was observed that a change in the time to maximum temperature over the range of temperature-rise schedules employed had very little, if any effect upon the brightness as measured with the G. E. tester. However, as shown in Fig. 9, the brightness dropped as the permanganate numbers of the unbleached pulps increased, and the pulps liberated with sodium-base cooking acid were about one point higher in brightness at any given permanganate number then were those liberated with calcium-base liquor over the wide range of permanganate numbers covered.

Bleached Pulps

The pulps were bleached under the supervision of T. M. Brown by the two-stage bleaching procedure described by Schur and Baker *(1)*. The final brightness aimed at, as in the earlier work, was 87.5-88.5%.

In Fig. 10 the overall yield—i.e., the yield of bleached pulp based on wood—is plotted against the time to maximum temperature. Figures 11, 6, and 12 show the relationship between the bursting strength, tearing resistance, and the "beater-value," respectively of the bleached pulps and the time to maximum temperature. These curves manifestly parallel the corresponding curves in Figures 5, 6, and 7.

Remarks

In no case was there evidence of "burning" of the chips, even when the total cooking time was only 4½ hours and the time to maximum temperature was as low as one and one-half hours. This observation may come as a surprise to some, but it is undoubtedly to be attributed mainly to the excellent control and uniformity of temperature and composition of cooking liquor throughout the charge in the laboratory digesters.

Discussion of Results

The previously observed faster pulping action of sodium-base cooking liquor as compared with calcium-base liquor, each containing initially 5.0% free and 1.0% combined SO_2, has been confirmed. In addition, it has been noted that the difference in rates of pulping decreases slightly as the time to reach maximum temperature is reduced. However, the extent of fiber liberation, as judged by freedom from screenings, decreased much more rapidly in the case of the cooks with calcium-base liquor as the time to maximum temperature was decreased.

Yorston *(4)* indicates that the difference in rate of delignification observed with calcium-base and magnesium-base cooking liquors may be attributed to a difference in the partial pressure of the sulphur dioxide. Such difference may be due, for any given percentage of free and combined SO_2 contained in the liquor, to differences in ionization of the respective bisulfite salts and to differences in hydrogen-ion concentration. Insufficient data are at hand to extend this generalization to the case of sodium-base cooking liquor.

It is interesting to note that the maximum pressure of 85 p.s.i. employed in the present study was reached at a lower temperature, approximately a constant difference of 6° F., with the calcium-base cooking liquor than with the sodium-base liquor, as shown in Fig. 13, regardless of the temperature schedule used. The maximum pressure was reached in a shorter time with the calcium-base liquor than with the sodium-base liquor, as shown in Fig. 14 but the difference was much greater when the time to maximum temperature was 9 hours than when it was 2 hours.

A search for the explanation of the more rapid pulping action of sodium-base cooking acid should take into consideration the differences shown in Figs. 13 and 14. A study of the pressure-temperature relationships and of vapor composition during the entire cook would undoubtedly be helpful.

Literature Cited

1. Schur, M. O., and Baker, R. E. *Paper Trade J.* 112, No. 20; 38-45 (May 15, 1941); *Tech. Assoc. Papers* 24: 405-412 (1941.)
2. Schur, M. O., and Baker, R. E. *Paper Trade J.* 115, No. 12: 33-40 (Sept. 17, 1942); *Tech. Assoc. Papers* 25: 453-460 (June 1942.)
3. Koon, C. M., and Keepers, C. H. *Paper Trade J.* 112, No. 1: 34-5 (Jan. 2, 1941)
4. Yorston, F. H. "Studies in Sulphite Pulping" Ottawa, Canada, Canadian Dept. of Mines and Resources. Dominion Forest Service Bulletin 97. 1942.

New TAPPI Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Bullock, Raymond C., tour foreman, Ecusta Paper Corporation, Pisgah Forest, N. C., attended Mercer University, and formerly with the Brunswick Pulp and Paper Company, Brunswick, Ga.

Burstein, Victor S., student, Institute of Paper Chemistry, Appleton, Wis.

Craig, William L., service engineer, R. T. Vanderbilt Company, Inc., 230 Park Ave., New York, N. Y.

Hudson, Russell T., chemical engineer, Union Bag and Paper Corporation, Savannah, Ga., has been transferred from the junior to the active grade.

Morse, Clifford G., laboratoy technician, Oswego Falls Coporation, Fulton, N. Y., attended New York State College of Forestry.

Pollard, John D., research chemist, American Cyanamid Company, Stamford, Conn., a 1926 graduate of Emory University, Atlanta, with an M.S. degree in 1927 from Emory University and a Ph.D. degree from Johns Hopkins University, Baltimore, in 1934, and formerly with E. I. Du Pont de Nemours & Co., Buffalo, N. Y.

Ruffer, Richard C., technical service assistant, American Cyanamid Company, Stamford, Conn., a 1936 graduate of Ohio State University and formerly with the Mead Corporation, Chillicothe, Ohio.

Traver, Roy F., undergraduate, New York State College of Forestry, Syracuse, N. Y.

Voigtman, Edward H., research, Kimberly-Clark Corporation, Neenah, Wis., has been reinstated as an active member.

White, William J., assistant chemist, Kalamazoo Vegetable Parchment Company, Parchment, Kalamazoo, Mich., a 1934 graduate of the University of Maine.

Voigts, Donald L., chief chemist, Filer Fibre Company, Filer City, Mich., a 1934 graduate of Albion College with a B.S. degree from Wayne University in 1935, and formerly with The Barrett Division, Allied Chemical and Dye Corporation, Peoria, Ill.

Will Accept V-2 in Place of V-1 Boxes

WASHINGTON, D. C., September 15—The U. S. Army Quartermaster Corps has notified the Containers Division of the War Production Board that it will accept V-2 boxes for packaging certain products where V-1 boxes previously were specified. The V-2 boxes take substantially less virgin pulp, thus spreading the available supply of this material.

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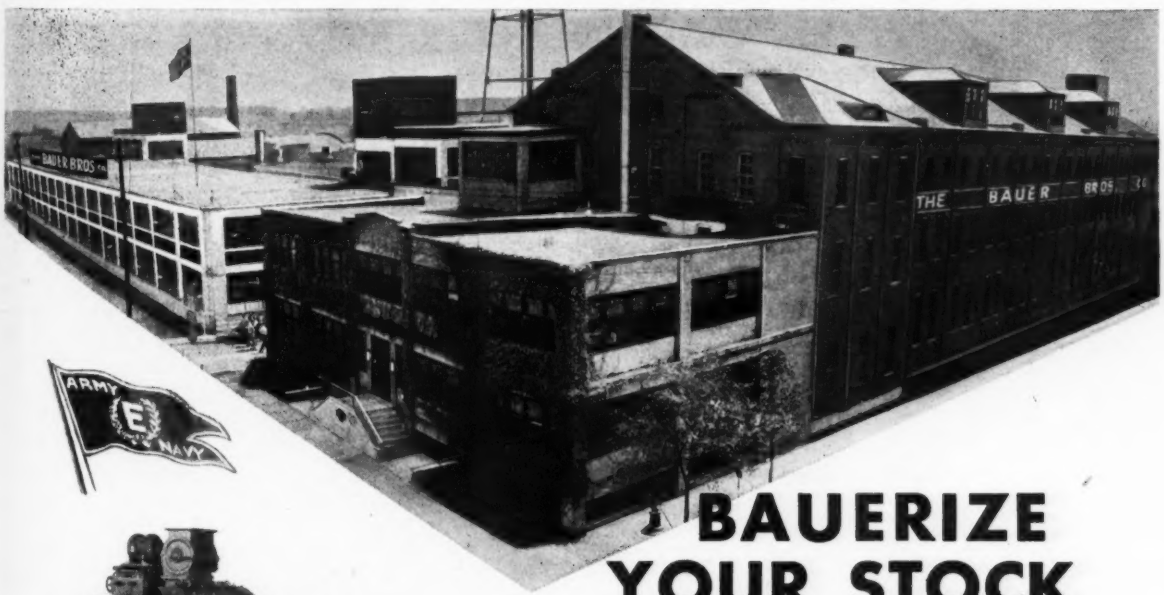

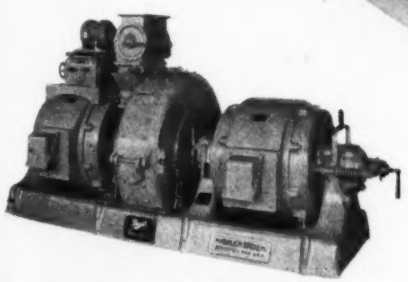

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New York Paper and Pulp Market Review

Paper Market Strong With Orders In Some Grades Far Above Supply and a Tighter Situation Exists — Wood Pulp Supply Situation Still Unfavorable — Mill Buying of Old Waste Paper Heavy.

Office of the PAPER TRADE JOURNAL,
Wednesday, September 15, 1943.

Orders for many types of paper in the wholesale market are still increasing and are now sufficiently high to show substantial backlogs. Reports received this week from many manufacturers' representatives, jobbers, and general paper merchants, reflect great concern at the acute pulpwood situation and the discouraging manpower situation as it applies to the industry and to the operation of their own business. Little relief can be expected in either quarter, however, as the war economy must, of necessity, create many difficulties and hardships in almost all civilian activities.

Some relief may be provided, in the opinion expressed in some quarters, that the declaration of pulpwood as essential in Canada, may increase the supply of chemical wood pulp in the future. The lack of labor is so acute, however, that pulp supplies in the future are not likely to meet requirements. The point may be made that the decision of the Administration apparently will make a more substantial reduction in many types of paper and paper products for trade uses under a tightening war economy. Less plentiful supplies of certain foods and some types of paper and paper products appears inevitable. The experience of Great Britain is frequently mentioned as a precedent which may be followed as necessity may be determined by governmental agencies. In a controlled economy like the present emergency, the operation of supply and demand is largely replaced by arbitrary wartime regulations.

Paper production for the week ended September 4 was estimated at 91.4%, compared with 83.3% for 1942, with 84.8% for 1941, with 69.3% for 1940, and with 74.0% for the corresponding week for 1939.

Paper board production for the week ended September 4 was 97.0%, compared with 78.0% for 1942, with 80.0% for 1941, with 60.0% for 1940, and with 63.0% for the corresponding week for 1939.

Some technical changes in tissue paper products was issued by the OPA on September 14, in Amendment No. 5 to MPR-266. It defines "manufacturer" and covers differentials for 4-inch toilet tissue, and continuous unsheeted roll towels.

Wood Pulp

The general over-all supply situation in chemical wood pulp continues tight, as tonnage is strictly allocated by WPB to those mills considered products most essential to the war. No change from this distributing plan can be expected during the present critical development of America at war in Europe. Current reports from Canada are unfavorable and a shortage of approximately 720,000 tons of pulp is the current estimate for exports to the U. S. this year.

Rags

The OPA on September 10 ruled that persons buying new cotton, linen and underwear cuttings from a branch of the Armed Forces for shipment to a consuming mill, may not charge brokerage fees. This does not apply to direct shipments to branches of the Armed Forces. This ruling concerns MPR No. 344.

Mill buying of cotton cuttings is reported active. The colored grades continue to lead in demand. Business in new whites is fair.

Trading in old cotton rags is also active this week in almost all grades. Roofing rags are in heavy demand. All grades are maintained at ceiling prices.

Old Rope and Bagging

No important change in the old rope market has been reported this week. Demand for No. 1 Manila rope is heavy and all supplies are taken by mills to produce products essential to the war.

The old bagging market is reported slow and prices are soft. The roofing grades are active, however, and ceiling prices are firmly maintained. Prices on all grades of scrap bagging are nominal.

Old Waste Paper

Mill demand for all grades of waste paper continues heavy. Prices are maintained at ceiling levels. Supplies are also reported as well under demand, due to relatively low collections, dependent upon lack of labor within the waste materials industry.

Twine

Demand for all standard grades of twine is active. No important change in prices or in any other market factor has been reported during the current week.

TAPPI Speakers to Broadcast

The opening of the TAPPI Army and Navy Requirements Conference will be featured by a broadcast over WGN, Mutual Station, in Chicago. This will include selections by the Great Lakes Naval Training Station Band, the Color Guard Ceremony and addresses by Rear Admiral William B. Young (SC) Paymaster General of the Navy and Chief of the Bureau of Supplies and Accounts and by Brigadier General E. E. MacMorland of the Office of the Chief of Ordnance of the United States Army. Ralph A. Hayward, President of the Technical Association, will introduce the speakers. The broadcast will be heard over WGN at 12:00 noon, Tuesday, September 21st.

The speaker at the luncheon on Wednesday, September 22nd will be Col. Robert R. McCormick, editor and publisher of the *Chicago Tribune*.

The speakers for the Thursday luncheon (September 23) will be the Hon. A. E. Giegengack, the Public Printer of the United States and William J. Cassiday, Director of Purchases for the Government Printing Office, Washington, D. C.

J. C. Clark Made Eastern Sales Mgr.

BOSTON, Mass., September 13, 1943.—Joseph C. Clark, formerly Eastern sales manager for Louis Dejonge & Co., has been appointed sales manager for Kupfer Brothers Company in place of Arthur Lewin, who died recently.

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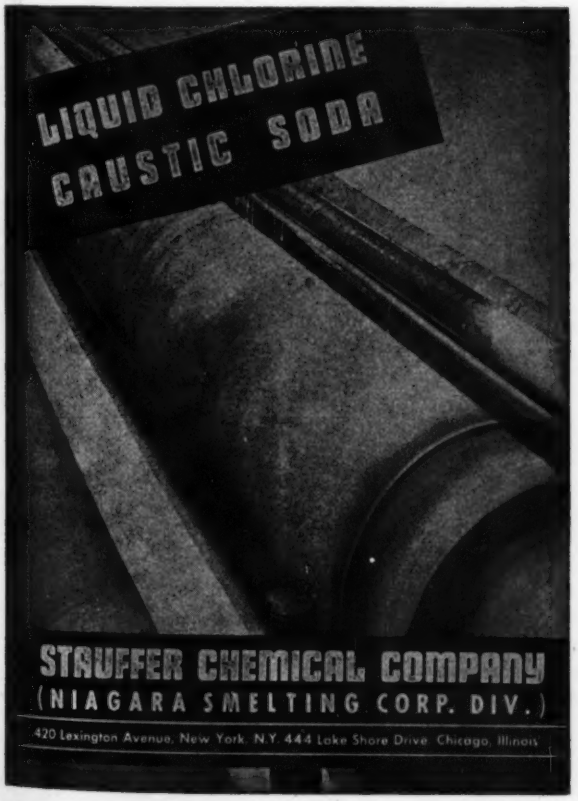
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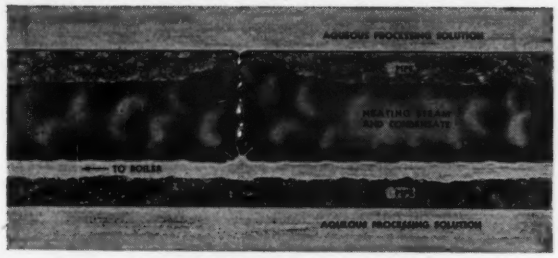

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For a continuous, automatic record of condensate purity, in addition to a signal and operation of a dump valve, we recommend No. 33111 Micromax Signalling Recorder.

For further information, see Catalog N-95-163 (1), on the Signalling Controller, or Catalog N-95-163, on the Micromax Controlling Recorder.

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MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, September 15, 1943.

BLANC FIXE—The demand for blanc fixe continues fair and prices are unchanged. The current quotation is $40 per ton in barrels, at works; the powder is offered at $60 per ton, f.o.b., works.

BLEACHING POWDER—Current prices on bleaching powder are reported as firm and demand is heavy. Bleaching powder is currently quoted at $2.50 per 100 pounds, in drums, at works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b., shipping point.

CAUSTIC SODA—Prices on caustic soda are unchanged for the week. Supply situation is reported tight. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Prices on china clay are firm and continue unchanged. Demand reported fair for the current week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton at mine. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine unchanged. Government demand for war use continues heavy. Prices firm. Market tight. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—Quotations on some grades of rosin are lower for the current week. "G" gum rosin is curently quoted at $3.96 per 100 pounds in barrels, Savannah. "FF" wood rosin is currently quoted at $3.88 per 100 pounds in barrels, New York. Seventy per cent gum rosin size is currently quoted at $4.15 per 100 pounds, f.o.b., works.

SALT CAKE—Demand for salt cake is reported fair for the current week. Quotations are unchanged. Domestic salt cake is currently quoted at $15 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point.

SODA ASH—Demand heavy. Quotations on soda ash continue to conform to prevailing market quotations. Supply tight. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—The corn market continues to be reported as tight. Quotations continue unchanged for the week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds. All prices in bags, car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA—The market for sulphate of alumina is unchanged. Supply more limited for the current week. The commercial grades are currently quoted at $1.15 to $1.25 per 100 pounds; iron free is quoted at $2.35 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Demand for sulphur continues heavy with ample supplies. Quotations are unchanged. Annual contracts are currently quoted at $16 per long ton, f.o.b. mines. Supplies at Gulf Ports are quoted at $17.50 per long ton.

TALC—Demand for talc is good and prices continue at prevailing market levels. Domestic talc is currently quoted at from $16 to $21 per ton, at mills. No quotations available on imported talc.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

News, per ton—			
Roll, contract	*$54.00	@	—
Sheets	62.00	"	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.60	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00
Boards, per ton—			
News	*48.00	@	—
Chip	*45.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext.		
No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$15.50
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	13.25
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. & S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. & S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight, Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$76.00		
Unbl. Softwood Sulphite	65.00	@	66.00
Bl. Hardwood Sulphite	73.50		
Unbl. Hardwood Sulphite	63.50		
Bl. Mitscherlich	81.00		
Unbl. Mitscherlich	72.00	@	82.00
N. Bleached Sulphate	86.00		
S. Bleached Sulphate	79.00		
N. Semi-Bleached Sulphate	82.00		
S. Semi-Bleached Sulphate	75.00		
N. Unbl. Sulphate	73.00		
S. Unbl. Sulphate	63.50		
Bl. Soda	66.00		
Unbl. Soda	62.00		
Groundwood	46.00		

Transportation Allowances Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

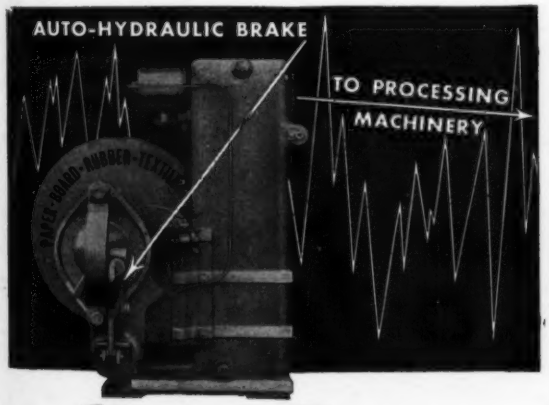
* OPA Maximum Prices.

More than just a TRADE MARK

EXCELSIOR KNOX Woolen Co. Camden, Me. FELTS & JACKETS

BUT also a guarantee by men who for 78 years have prided themselves in making finer felts. TO YOU —this is the mark of dependability, longer felt life and greater saving.

KNOX WOOLEN CO.
CAMDEN, MAINE.



Uniform Tension

DESPITE SPEED CHANGES

Also Handles Gauze, Burlap, Osnaburg Cloth, Waxed Papers, Abrasive Papers, Abrasive Cloth, Varnished Cambrics, Imitation Leather, Coated Papers, Uncured Rubber, Semi-Cured Rubber.

Used in converting, waxing, coating, embossing, printing, etc.

Labor and time-saving always result, and increased production, improved quality and less spoilage almost invariably result, when the Johnstone Uniform Tension Unwinder is installed. The machine operator need no longer be constantly on the alert to apply or release the hand brake controlling the speed of the unwinding roll. The "Tensioneer" of this machine practically "thinks for itself" in activating the Auto-Hydraulic Brake. Once the machine tension is set, by adding or removing weights, the operator can forget all about tension, even in starting, stopping or jogging starts. This "pull-balancing" automaton maintains the web tension uniform whether the roll speed is 15 F.P.M. or 1500 F.P.M., sometimes even at 2000 F.P.M., regardless of the diameter of the roll.

CATALOG ON REQUEST

JOHNSTONE
Engineering & Machine Co.
DOWNINGTOWN, PA.

Kalamazoo GLAZED TILE

— The Finest Material for Paper Mill Needs —

Hundreds of paper mill executives and engineers know that Kalamazoo Tile construction costs less—lasts longer—controls stock better—requires less maintenance—and is more flexible as to size or design in meeting production layouts.

No other material equals the smooth, hard surface that is impervious to most chemicals—flushes clean—does not flake, pit or scale—and is free from friction.

Should fins—midfeathers—agitators—round—square or tapered ends, corners and bottoms be needed—the exclusive Kalamazoo method makes it easy to construct and moderate in cost, usually less than reinforced concrete.

Ask for engineering data.

Kalamazoo TANK & SILO CO.
KALAMAZOO - MICHIGAN

SIMPLICITY

NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Mixed Books	.85	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	.85	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	-	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1	.07¼	@	.07½
New White No. 2	.04½	"	.05
Light Silesias	.04½	"	.04¾
Silesias, No. 1	.04	"	.04¼
Black Silesias, soft	.03¼	"	.04
New Unbleached	.07¼	"	.07½
Washable Prints	.03¼	"	.03½
Washable No. 1	.02	"	.02¼
Blue Overall	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales	.03¼	"	.03½
New Black Soft	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.	.03	"	.03¼
No. 2 Mixed	.02¼	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas	.04¾	"	.05¼
New Black Mixed	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Sisal Rope	3.75	"	—
Mixed	1.00	"	1.50
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.13	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.15	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
New Manila Envelope Cuts, one cut	3.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	3.75	@	4.00
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	1.35	"	1.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.60	"	3.85
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	4.65	"	4.87½
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Bagging	1.35	"	—*

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.05
New White No 1.	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06½
Underwear Cutters, Bleached	.06¼	"	.06¾
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¾
New Black Silesias	.03	"	.03¾
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¾
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06¾
B. V. D. Cuttings	.06¼	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—*
No. 2	1.45	"	—*
No. 3	1.35	"	—*
No. 4	1.35	"	—*
No. 5, Quality A	1.35	"	—*
Quality B	1.20	"	—*
Quality C	.95	"	—*
* Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—